



# DIGITAL ACCESS TO SCHOLARSHIP AT HARVARD

## The Uneasy Case for Product Liability

The Harvard community has made this article openly available.  
[Please share](#) how this access benefits you. Your story matters.

Citation	A. Mitchell Polinsky & Steven M. Shavell, The Uneasy Case for Product Liability, 123 Harv. L. Rev. 1436 (2010).
Published Version	<a href="http://www.harvardlawreview.org/media/pdf/polinsky_shavell.pdf">http://www.harvardlawreview.org/media/pdf/polinsky_shavell.pdf</a>
Accessed	February 19, 2015 1:10:37 PM EST
Citable Link	<a href="http://nrs.harvard.edu/urn-3:HUL.InstRepos:10900865">http://nrs.harvard.edu/urn-3:HUL.InstRepos:10900865</a>
Terms of Use	This article was downloaded from Harvard University's DASH repository, and is made available under the terms and conditions applicable to Open Access Policy Articles, as set forth at <a href="http://nrs.harvard.edu/urn-3:HUL.InstRepos:dash.current.terms-of-use#OAP">http://nrs.harvard.edu/urn-3:HUL.InstRepos:dash.current.terms-of-use#OAP</a>

*(Article begins on next page)*

---

---

# THE UNEASY CASE FOR PRODUCT LIABILITY

*A. Mitchell Polinsky and Steven Shavell*

## TABLE OF CONTENTS

I.	INTRODUCTION .....	1438
II.	THE SAFETY BENEFIT OF PRODUCT LIABILITY .....	1443
	<i>A. Incentives To Reduce Product Risk Generated by Market Forces.....</i>	1443
	<i>B. Regulation of Product Risk.....</i>	1450
	<i>C. Risk Reduction Accomplished by Product Liability.....</i>	1453
III.	THE PRICE-SIGNALING BENEFIT OF PRODUCT LIABILITY .....	1459
	<i>A. Price-Signaling and Consumer Information .....</i>	1459
	<i>B. Price-Signaling and First-Party Insurance.....</i>	1461
IV.	THE COMPENSATION BENEFIT OF PRODUCT LIABILITY .....	1462
	<i>A. Compensation Accomplished by Insurance .....</i>	1462
	<i>B. Compensation Accomplished by Product Liability.....</i>	1463
	<i>C. The Social Desirability of the Compensation Accomplished</i> <i>by Product Liability .....</i>	1465
V.	THE COSTS OF PRODUCT LIABILITY .....	1469
	<i>A. Legal Expenses .....</i>	1469
	<i>B. Price Distortions .....</i>	1470
VI.	IS PRODUCT LIABILITY SOCIALLY WORTHWHILE GIVEN	
	ITS BENEFITS AND COSTS? .....	1472
	<i>A. Product Liability for Widely Sold Products .....</i>	1472
	<i>B. Product Liability for Products That Are Not Widely Sold.....</i>	1476
VII.	THE PREVAILING SOCIAL ENDORSEMENT OF PRODUCT LIABILITY .....	1476
	<i>A. Judicial Opinions.....</i>	1476
	<i>B. Academic Writing.....</i>	1483
	<i>C. Public Commentary.....</i>	1487
VIII.	THE CONTRAST BETWEEN PRODUCT LIABILITY AND	
	LIABILITY TO STRANGERS .....	1490
IX.	CONCLUSION .....	1491

---

---

## THE UNEASY CASE FOR PRODUCT LIABILITY

A. Mitchell Polinsky\* and Steven Shavell\*\*

*In this Article we compare the benefits of product liability to its costs and conclude that the case for product liability is weak for a wide range of products. One benefit of product liability is that it can induce firms to improve product safety. Even in the absence of product liability, however, firms would often be motivated by market forces to enhance product safety because their sales may fall if their products harm consumers. Moreover, products must frequently conform to safety regulations. Consequently, product liability might not exert a significant additional influence on product safety for many products — and empirical studies of several widely sold products lend support to this hypothesis. A second benefit of product liability is that it can improve consumer purchase decisions by causing product prices to increase to reflect product risks. But because of litigation costs and other factors, product liability may raise prices excessively and undesirably chill purchases. A third benefit of product liability is that it compensates victims of product-related accidents for their losses. Yet this benefit is only partial, for accident victims are frequently compensated by insurers for some or all of their losses. Furthermore, the award of damages for pain and suffering tends to reduce the welfare of individuals because it effectively forces them to purchase insurance for a type of loss for which they ordinarily do not wish to be covered. Opposing the benefits of product liability are its costs, which are great. Notably, the transfer of a dollar to a victim of a product accident through the liability system requires more than a dollar on average in legal expenses. Given the limited nature of the benefits and the high costs of product liability, we come to the judgment that its use is often unwarranted. This is especially likely for products for which market forces and regulation are relatively strong, which includes many widely sold products. Our generally skeptical assessment of product liability for such products is in tension with the broad social endorsement of this form of liability.*

### I. INTRODUCTION

The liability of manufacturers of products for harms caused to their customers — product liability<sup>1</sup> — has great prominence in the United

---

\* A. Mitchell Polinsky is the Josephine Scott Crocker Professor of Law and Economics at Stanford Law School. Polinsky's research on this Article was supported by the John M. Olin Program in Law and Economics at Stanford Law School.

\*\* Steven Shavell is the Samuel R. Rosenthal Professor of Law and Economics at Harvard Law School. Shavell's research was supported by the John M. Olin Center for Law, Economics, and Business at Harvard Law School.

Both authors are also Research Associates of the National Bureau of Economic Research. The authors received helpful comments from Tom Baker, Richard Craswell, John Goldberg, Louis Kaplow, David Rosenberg, Jed Shugerman, Kathryn Spier, and Stephen Spurr, and gratefully acknowledge research assistance from many individuals, especially Anita Christy, Eric Hansford, Patricia Judge, Jeffrey Kessler, Rakesh Kilaru, James Kwok, Peter Mandel, Joshua Minix, Joanna Nairn, Scott Noveck, Kevin Scott, Sherri Wolson, and Crystal Yang.

<sup>1</sup> RESTATEMENT (THIRD) OF TORTS: PRODUCTS LIABILITY § 1 (1998) [hereinafter RESTATEMENT (THIRD)] (“One engaged in the business of selling or otherwise distributing products who sells or distributes a defective product is subject to liability for harm to persons or property caused by the defect.”); *id.* § 1 cmt. c (“The rule stated in this Section applies . . . to

States. Tens of thousands of product liability cases are filed annually in state and federal courts, including some as class or other mass tort actions that can involve thousands or even millions of individuals as plaintiffs.<sup>2</sup> The legal bases for product liability suits are expansive, comprising liability for manufacturing defect, design defect, and failure to warn.<sup>3</sup> Product liability cases receive significant attention from the media, especially when they concern widely sold products that harm many consumers.<sup>4</sup> Moreover, product liability is of growing importance outside of the United States, particularly in the European Union and in Asia.<sup>5</sup>

---

manufacturers and other commercial sellers and distributors . . ."); *see also* RESTATEMENT (SECOND) OF TORTS § 402A (1965) [hereinafter RESTATEMENT (SECOND)]. *See generally* DAN B. DOBBS, *THE LAW OF TORTS* § 352, at 969–72 (2000); DAVID G. OWEN, *PRODUCTS LIABILITY LAW* § 1.1, at 1–10 (2005).

<sup>2</sup> The most recent year for which relevant data are available is 2006. In this year, 6454 product liability cases were filed in the nine states studied by the National Center for State Courts. NAT'L CTR. FOR STATE COURTS, *EXAMINING THE WORK OF STATE COURTS*, 2007: A NATIONAL PERSPECTIVE FROM THE COURT STATISTICS PROJECT 17 (Robert C. LaFountain et al. eds., 2008), available at [http://www.ncsconline.org/D\\_Research/csp/2007\\_files/Examining%20Final%20-%202007%20-%201%20-%20Whole%20Doc.pdf](http://www.ncsconline.org/D_Research/csp/2007_files/Examining%20Final%20-%202007%20-%201%20-%20Whole%20Doc.pdf) (providing annual product liability caseload numbers from 1997 to 2006 in a spreadsheet that can be accessed by clicking on the "x" icon to the left of the phrase "Product Liability"). Using population data from the U.S. Census Bureau to extrapolate from this number to the nation as a whole results in 29,163 state product liability cases in 2006. *See* U.S. CENSUS BUREAU, *THE 2009 STATISTICAL ABSTRACT* 17 tbl.12 (2009), available at <http://www.census.gov/prod/2008pubs/09statab/pop.pdf>. In fiscal year 2006, there were also 49,743 product liability cases filed in federal district court. ADMIN. OFFICE OF THE U.S. COURTS, *2007 ANNUAL REPORT OF THE DIRECTOR: JUDICIAL BUSINESS OF THE UNITED STATES COURTS* 59 tbl.S-10 (2008). Hence, the estimated number of state and federal product liability cases in 2006 is 78,906. For an example of a product liability class action involving a large number of individuals, see *In re Diet Drugs*, Nos. 1203, 99-20593, 2000 WL 1222042, at \*41 (E.D. Pa. Aug. 28, 2000), in which the court approved a settlement in favor of a class of approximately six million users of diet drugs. *See also* 1 ALBA CONTE & HERBERT NEWBERG, *NEWBERG ON CLASS ACTIONS* § 3:5, at 243–46 (4th ed. 2002) ("Class actions under the amended Rule 23 have frequently involved classes numbering in the hundreds, or thousands, or even millions." (footnotes omitted)). Although the ability of plaintiffs to bring product liability suits as class actions has diminished in recent years, other means of aggregating cases are available to them. *See* Deborah R. Hensler, *Has the Fat Lady Sung? The Future of Mass Toxic Torts*, 26 REV. LITIG. 883, 904 (2007) ("[A] review of federal product liability filings and MDL [Multidistrict Litigation] activity suggests that mass product liability litigation is still very much alive.").

<sup>3</sup> *See infra* notes 59–62 and accompanying text.

<sup>4</sup> *See infra* section VII.C, pp. 1487–90.

<sup>5</sup> *See generally* LOVELLS, *PRODUCT LIABILITY IN THE EUROPEAN UNION: A REPORT FOR THE EUROPEAN COMMISSION* 31 (2003) ("There has been a noticeable increase in the number of product liability claims in the EU in the last 10 years."); *id.* at 37; OWEN, *supra* note 1, § 1.4, at 49 ("[O]ver the last decade or two of the twentieth century, and the beginning years of the current century, modern products liability law and litigation has begun to spread its wings around the world."); *An Explanation of Japan's Product Liability Law*, 5 PAC. RIM L. & POL'Y J. 299 (Thomas Leo Madden trans., 1996) (describing a 1994 law that enhanced the Japanese product liability regime); Mathias Reimann, *Liability for Defective Products at the Beginning of the Twenty-First Century: Emergence of a Worldwide Standard?*, 51 AM. J. COMP. L. 751, 756–60 (2003) ("[P]roduct liability has established itself in the vast majority of economically developed coun-

Perhaps surprisingly, no one to our knowledge has attempted to examine the question whether, or in what circumstances, product liability is socially desirable, considering its major benefits and costs.<sup>6</sup> We undertake this task here and come to the judgment that the case for product liability is problematic for a wide range of products. The essence of our argument is that the three beneficial effects of product liability — inducing firms to improve product safety, causing prices of products to reflect their risks, and providing compensation to injured consumers — are, for many products, likely to be outweighed by the litigation and related costs of product liability.<sup>7</sup>

We discuss the influence of product liability on product safety in Part II of the Article. To assess this effect, it is necessary to consider whether firms would have an incentive to make safe products even in the absence of product liability. One reason that firms might have such an incentive concerns market forces, namely, that their sales may fall if their products harm consumers or are viewed as unduly risky, or that their sales may rise if their products are seen as particularly safe. We document this phenomenon with a number of examples involving widely sold products and describe more generally how consumers might learn about product risks. A second reason that firms might take steps to enhance the safety of their products is that they may be subject to safety regulations. Such regulations apply to a broad range

---

tries, . . . it is recognized as a special subject in many other parts of the world, and . . . there is a tendency for it to spread further. In short, it is fast becoming a global phenomenon." *Id.* at 757.; Craig S. Smith, *Chinese Discover Product-Liability Suits*, WALL ST. J., Nov. 13, 1997, at B1 ("In the three years since China's consumer-rights laws took effect, liability lawsuits have risen to more than half a million annually.").

<sup>6</sup> See *infra* section VII.B, pp. 1483–87.

<sup>7</sup> Our benefit-cost evaluation of product liability follows in the tradition of the analysis of tort law from a social welfare-maximizing or instrumental perspective. For a prominent early example of this economic approach, see GUIDO CALABRESI, *THE COSTS OF ACCIDENTS* (1970). See also WILLIAM M. LANDES & RICHARD A. POSNER, *THE ECONOMIC STRUCTURE OF TORT LAW* (1987); STEVEN SHAVELL, *ECONOMIC ANALYSIS OF ACCIDENT LAW* (1987). As is conventional in such analysis, we do not consider notions of fairness, on which individuals may place value and which thus should in principle be incorporated into social welfare. See generally LOUIS KAPLOW & STEVEN SHAVELL, *FAIRNESS VERSUS WELFARE* (2002). As is also conventional in economic analysis, we do not take the effects of legal policy on the distribution of income into account. One reason is that redistribution of income may be difficult to accomplish through the law when, as here, the relevant parties are in a market relationship — notably, an attempt to redistribute income from manufacturers to consumers by imposing liability on manufacturers could be undone by price increases. See generally Richard Craswell, *Passing On the Costs of Legal Rules: Efficiency and Distribution in Buyer-Seller Relationships*, 43 STAN. L. REV. 361 (1991). In addition, it can be argued that legal rules should not be employed to redistribute income because the income tax and transfer system can better serve that purpose. See generally Louis Kaplow & Steven Shavell, *Why the Legal System Is Less Efficient than the Income Tax in Redistributing Income*, 23 J. LEGAL STUD. 667 (1994).

of products, including pharmaceuticals, food, automobiles, and household appliances. To the extent that market forces and regulation cause firms to make safe products, the potential for product liability to further improve product safety is reduced. We suggest that these factors are especially important for many widely sold products and therefore will often significantly lower the degree to which product liability adds to product safety. Lending support to this judgment is that, for each of the several widely sold products that have been studied empirically, product liability fails to lead to a measurable increase in product safety.

We address the second benefit of product liability, that it raises product prices and thus can usefully signal product risks to consumers, in Part III. We explain that this price-signaling effect yields a benefit only to the extent that consumers misperceive product risks. We also discuss complicating factors that may enhance or diminish the price-signaling benefit.

We evaluate the third benefit of product liability, that it compensates victims for their injuries, in Part IV of the Article. We emphasize there that product liability promotes the compensation goal only incrementally, because insurance coverage (including through public compensation programs) is widespread. In other words, individuals frequently would be compensated for some, and possibly all, of their product-related losses even in the absence of the product liability system. This is not to deny, of course, that many individuals do not have insurance or do not have sufficient coverage. We also explain that product liability actually tends to work counter to the compensation goal because, by including damages for pain and suffering, it effectively forces individuals to purchase insurance coverage for a category of losses for which they generally do not wish to be insured.

In Part V we discuss the legal and related costs of the product liability system. Studies of these costs demonstrate that for every dollar that victims of product accidents receive through the liability system, average legal expenses incurred by victims and injurers exceed a dollar. In addition to the direct legal expenses of the product liability system, there are indirect costs generated by the effect of legal expenses on product prices. Specifically, because firms must raise the prices of their products to cover their legal costs, consumers are undesirably discouraged from purchasing goods.<sup>8</sup>

---

<sup>8</sup> Additionally, we explain that compensation for nonmonetary losses further discourages consumption and results in consumer welfare losses.

We come to the major conclusion of the Article in Part VI, that the case favoring product liability is weak for products for which market forces and regulation are strong, because the benefits of product liability are then likely to be outweighed by its costs. We suggest that this conclusion is most applicable in the domain where the use of product liability is most prominent — for widely sold products such as drugs and automobiles. The main reason is that the influence of market forces and regulation on product safety tends to be significant for products that are widely sold, because problems with these products commonly attract the attention of consumers and regulators. For products that are not widely sold, however, market forces and regulation will usually be less effective and, as a consequence, product liability is more likely to be socially advantageous.<sup>9</sup>

In Part VII we discuss the contrast between our skeptical assessment of product liability, at least for widely sold products, and the broad, though not universal, endorsement of product liability in judicial opinions, academic writing, and the media. The generally favorable view of product liability held by others stems from the belief that such liability satisfies basic notions of fairness and yields significant product safety and compensation benefits. But this judgment does not recognize that the benefits of product liability are incremental in nature; only the enhancement to the level of product safety already generated by market forces and regulation should be counted, and only the addition to the level of compensation already yielded by insurance coverage should be included. Furthermore, the proponents of product liability ordinarily ignore the high litigation costs that it engenders. The critics of product liability, too, make errors in assessing its benefits and costs.

Finally, in Part VIII, we compare product liability to the liability of firms to strangers — that is, to individuals they injure who are not their customers. Examples are fishermen harmed by an oil spill or homeowners injured by an explosion at a chemical factory. Here market forces do not operate to penalize firms for the harm that they generate because the victims of the harm are not their customers. Accordingly, the case for liability of firms to strangers is stronger than that for product liability.

Our analysis in this Article is intended to alter the dominant view of the judiciary and of commentators that product liability has a clear

---

<sup>9</sup> The methodology that we employ to evaluate product liability could also be used to evaluate the liability of providers of services, such as physicians and accountants. It does not matter to our logic that what is purchased is a service rather than a product. The conclusions, of course, might be different.

justification on grounds of policy. We believe, instead, that a more critical attitude toward product liability should be adopted. This Article is not meant, however, to be an immediate call for judicial or legislative change. That would require a more detailed consideration of the benefits and costs of product liability than we can undertake here, as well as a careful examination of how legal doctrine could be usefully modified.<sup>10</sup>

Before proceeding, we also want to observe that our evaluation of product liability is not premised on a commonly encountered belief that juries and courts misapply the law or too liberally assess damages.<sup>11</sup> Our analysis is consistent with the assumption that product liability law is applied in an unbiased manner and that damages are measured without systematic error. We nonetheless conclude that the use of product liability is problematic in many circumstances because, even if correctly implemented, it might not generate social benefits that are worth its costs.

## II. THE SAFETY BENEFIT OF PRODUCT LIABILITY

In this Part we first discuss how market forces and regulation might reduce product risks. We then investigate the safety benefit of product liability, that is, the extent to which it adds to the level of safety already generated by market forces and regulation.<sup>12</sup>

### *A. Incentives To Reduce Product Risk Generated by Market Forces*

Market forces can provide firms with an incentive to improve product safety, for if consumers believe that the risk of a product is high, they will either avoid buying the product or will not pay as much for it as they otherwise would. For example, Tylenol's market share

---

<sup>10</sup> See *infra* Part IX, pp. 1491–92.

<sup>11</sup> See generally MICHAEL S. GREVE, HARM-LESS LAWSUITS? WHAT'S WRONG WITH CONSUMER CLASS ACTIONS (2005) (claiming that the current product liability system results in double recoveries and excessive deterrence); ERIC HELLAND & ALEXANDER TABARROK, JUDGE AND JURY: AMERICAN TORT LAW ON TRIAL (2006) (maintaining that unwarranted awards are often given to plaintiffs, and that judges and juries frequently exhibit bias in making such awards); PETER W. HUBER, LIABILITY: THE LEGAL REVOLUTION AND ITS CONSEQUENCES (1988) (arguing that unduly high awards in product liability cases, and tort cases more generally, chill innovation and overdeter socially desirable behavior).

<sup>12</sup> In other words, we consider the desirability of product liability against the background of the world as we find it, including the way in which market forces and regulation now operate. One could instead examine product liability against the background of an ideal world, in which, for example, market forces might be supplemented with additional government-provided information about product risks and safety regulation might be more extensive. Such an undertaking is beyond the scope of this Article.



fell from 35% to 5% following the deaths in 1982 of seven individuals who had ingested contaminated Tylenol capsules.<sup>13</sup> Odwalla's sales of natural juices declined by 90%<sup>14</sup> in 1996 after one person died and sixty others were made ill by consuming some of its products containing *E. coli* bacteria.<sup>15</sup> And Audi's automobile sales dropped by 69% after reports in the mid-1980s of problems of sudden acceleration of its vehicles.<sup>16</sup> There are many other examples in which sales declined significantly after consumers learned that a product was especially risky.<sup>17</sup>

When, however, the harms at issue are not as salient as the ones just mentioned, market responses will tend to be weaker. If the losses are low, occur infrequently, are difficult to trace to a product, even-

<sup>13</sup> See Tamar Lewin, *Tylenol Posts an Apparent Recovery*, N.Y. TIMES, Dec. 25, 1982, at 30 (noting that Tylenol had a 35% market share before the deaths and quoting a company executive who said that "[w]e lost 87 percent of our market"). After Johnson & Johnson switched to tamper-resistant packaging of its Tylenol product and instituted an extensive coupon campaign offering free Tylenol, Tylenol's market share returned to 24%, still significantly below its earlier 35% market share. *Id.*

<sup>14</sup> See Brenda L. Moore, *Time May Be Right To Take Bite of Odwalla*, WALL ST. J., Aug. 19, 1998, at CAt.

<sup>15</sup> See Warren King, *Another Toddler Treated for E. Coli*, SEATTLE TIMES, Nov. 15, 1996, at B3.

<sup>16</sup> See Bradley A. Stertz, *U.S. Study Blames Drivers for Sudden Acceleration*, WALL ST. J., Feb. 2, 1989, at B1 ("Within the past three years, fears that Audis were prone to sudden acceleration cut U.S. sales of the models from an all-time high of 74,000 units in 1985 to just 22,943 last year."). While this article suggests that there might not have been a mechanical problem causing sudden acceleration of Audi automobiles, the pronounced reduction in the sales of Audis shows that consumer beliefs about the safety of a product can strongly influence demand for it.

<sup>17</sup> See, e.g., RICHARD N.L. ANDREWS, *MANAGING THE ENVIRONMENT, MANAGING OURSELVES* 213-14 (2d ed. 2006) (observing that sales of cranberries dropped by two-thirds after the discovery that some cranberries had been sprayed with a potentially toxic pesticide); GARY DAVIES ET AL., *CORPORATE REPUTATION AND COMPETITIVENESS* 110-11 (2003) (noting that Perrier's U.K. market share fell from 32% to 17% in the month following an announcement of benzene contamination); RONALD D. MICHMAN & EDWARD M. MAZZE, *THE FOOD INDUSTRY WARS* 140-41 (1998) (reporting that Gerber's market share declined from 72% to 52% in 1986 after bits of glass were found in Gerber peaches in several states); Suresh Govindaraj, Bikki Jaggi & Beixin Lin, *Market Overreaction to Product Recall Revisited — The Case of Firestone Tires and the Ford Explorer*, 23 REV. QUANTITATIVE FIN. & ACCT. 31, 40 (2004) (observing that there was an "immediate drop of 50 percent . . . in the worldwide sales of Firestone tires" in the wake of their recall); *Dealing with Low Turnover*, TIME, Aug. 15, 1988, at 33 (reporting a 63% decline in sales of the Suzuki Samurai after a *Consumer Reports* article claimed that it was unsafe to drive); Stephen Foley, *Mattel Sales Hit by 'Toxic Toy' Recalls*, INDEPENDENT (London), Oct. 16, 2007, at 37 (noting that Mattel suffered a 19% decline in sales after a recall of lead-tainted toys); Jack in the Box's *Worst Nightmare*, N.Y. TIMES, Feb. 6, 1993, at L35 (reporting that Jack in the Box's sales dropped sharply after an *E. coli* outbreak was linked to its food products); Val Brickates Kennedy, *Guidant Reports Lower Sales, Profit*, WALL ST. J. MARKETWATCH, Jan. 27, 2006, <http://www.marketwatch.com/story/guidant-reports-lower-sales-profit-for-fourth-quarter> (stating that sales of Guidant defibrillators fell 19% following product recalls).

tuate many years after a product is used, or are concealed, then the harms will be noticed less often by consumers. Hence, in many circumstances firms might experience only a modest, or possibly no, decline in sales as a result of selling products that injure consumers.

While the demand for a firm's product might decline in response to detrimental information about product risks, it is also possible that demand would rise in response to favorable safety information. Volvo, for example, has been able to charge a premium for its automobiles, apparently because they have performed especially well in crash tests and have included safety features unavailable from other manufacturers.<sup>18</sup> Cirrus Design became the bestselling manufacturer of four-seat, single engine aircraft, in significant part because of its innovative provision of ballistic parachutes to lower its planes to safety in the event of loss of control.<sup>19</sup> Sellers of bottled water are able to charge much more than the price of tap water<sup>20</sup> because consumers perceive bottled water to be more pure.<sup>21</sup>

The degree to which consumers will punish manufacturers for unsafe products or reward them for safe products clearly depends on the information that consumers have about product safety,<sup>22</sup> and they have

<sup>18</sup> See William Boulding & Devavrat Purohit, *The Price of Safety*, 23 J. CONSUMER RES. 12, 24 (1996) (finding that Volvo is able to charge one of the highest premiums for its cars); Chuck Squatriglia, *Volvo Promises an Injury-Proof Car by 2020*, WIRED, May 2, 2008, <http://www.wired.com/autopia/2008/05/volvo-promises> ("Volvo's long been at the forefront of vehicle safety. It invented three-point safety belts and was the first to use crumple zones, side-impact airbags and rear-facing child seats. In a 2006 survey of 500 consumers conducted by Accenture, more than two-thirds of respondents ranked safety as the most important technology to include in their vehicles, 70 percent were willing to shell out extra for it. Volvo's long been the best at marketing safety, and a recent poll by *Consumer Reports* found 77 percent of respondents consider Volvo the safest car on the road.").

<sup>19</sup> *Taking the Fear Out of Flying: Cirrus Sales Soaring to the Stratosphere*, NODAK NEIGHBOR, Nov.-Dec. 2005, at 1, 4 ("The parachute innovation has Cirrus nipping at the tail wings of long-time industry leader Cessna."); Austin Weber, *Cirrus Soars with Composites*, ASSEMBLY, Sept. 2008, at 26, 27 (noting that the Cirrus SR22 is the "world's best-selling aircraft," in part because of its reputation for being "safe and easy to fly" and in part because Cirrus "pioneered the unique concept of a plane with a parachute").

<sup>20</sup> *More Consumers Turn on to Tap Water To Trim Costs*, WALL ST. J., Jun. 18, 2008, at B5D (observing that a year's worth of bottled water purchased from Costco would cost over \$400, while the same amount of tap water would cost \$0.51).

<sup>21</sup> Branden B. Johnson, *Comparing Bottled Water and Tap Water: Experiments in Risk Communication*, 13 RISK: HEALTH, SAFETY & ENV'T 69, 81 (2002) (finding that 43% of respondents thought that bottled water was safer than tap water, while only 3% of respondents thought the reverse). It is possible that individuals' perceptions of the safety of bottled water are exaggerated, but this example still supports the proposition that consumers' willingness to pay for a product depends significantly on their views of its safety.

<sup>22</sup> The more information consumers have about product risks, the better will be the market incentives acting on manufacturers to improve safety. In principle, if consumers possessed perfect information, any risk-reducing precaution whose cost is less than its value would be taken by a manufacturer. For instance, if consumers understand that a \$25 safety guard for a chainsaw will reduce accident losses by \$100, a manufacturer will include the safety guard with its chainsaws;

many sources of such information available to them. In 2009, for example, the top ten newspapers in the United States, with a total paid circulation of more than eight million people, published an estimated 2,800 articles related to product safety.<sup>23</sup> General news magazines, such as *Newsweek* and *U.S. News & World Report*, frequently include articles about product safety,<sup>24</sup> as do numerous specialized magazines, such as *Motor Trend* and *Guns & Ammo*.<sup>25</sup> Moreover, *Consumer Re-*

---

consumers will gladly pay an extra \$25 for the guard because it will reduce their losses by more than that amount. Of course, consumers are not perfectly informed in fact, so that market incentives generally will lead to less than optimal safety.

<sup>23</sup> The ten most widely read newspapers during the six month period ending on September 30, 2009, had a total paid daily (Monday through Friday) circulation of 8.36 million. In order of circulation, they were *The Wall Street Journal*, *USA Today*, *The New York Times*, *The Los Angeles Times*, *The Washington Post*, *The New York Daily News*, *The New York Post*, *The Chicago Tribune*, *The Houston Chronicle*, and *The Philadelphia Inquirer*. See Audit Bureau of Circulations, E-Circ Database, Newspapers, <http://abcas3.accessabc.com/ecirc/newsform.asp> (last visited Feb. 27, 2010) (on file with the Harvard Law School Library). A LexisNexis search of these newspapers for the word “product” within five words of the words “safety,” “danger,” or “injure,” or the words “accident” or “defect” along with the words “injure,” “danger,” or “hurt” returned 1412 articles published in the six month period between April 1, 2009, and September 30, 2009 (search last conducted Feb. 27, 2010).

<sup>24</sup> A LexisNexis natural language search for the keywords “dangerous,” “consumer,” “product,” “safety,” and “injury” in *Newsweek* returned the maximum 100 articles for the calendar year 2008, including articles on the danger of cosmetics, baby bottles, and small cars. See, e.g., Jac Chebatoris, *For a Superhealthy Glow*, NEWSWEEK, Mar. 24, 2008, at 79 (discussing the safety of cosmetic products); Anna Kuchment, *The Baby Bottle Blues*, NEWSWEEK, Jan. 14, 2008, at 53 (addressing the safety of baby bottles); Keith Naughton, *Small. It's The New Big*, NEWSWEEK.COM, Feb. 16, 2008, <http://www.newsweek.com/id/112729> (citing safety concerns as the most important reason that more small cars have not been sold). A similar search in *U.S. News & World Report* also returned the maximum 100 responses, including articles on the safety of all-terrain vehicles (ATVs), sugar substitutes, and plastics. See, e.g., Deborah Kotz et al., *12 Ways To Childproof Your Kids' Summer*, U.S. NEWS & WORLD REP., July 2, 2007, at 59, 60–61 (reporting on children's risk of injury as a result of operating ATVs); Adam Voiland, *Here Comes the Controversial New Sugar Substitute Stevia*, U.S. NEWS & WORLD REP., Sep. 15, 2008, at 90 (highlighting safety concerns about a new sugar substitute); Adam Voiland, *More Problems With Plastics*, U.S. NEWS & WORLD REP., May 19, 2008, at 54 (discussing safety issues associated with human exposure to hormone-disrupting synthetic chemicals found in common consumer products, including vinyl tiles and shower curtains, processed food, cosmetics, and toys and baby products).

<sup>25</sup> According to the Audit Bureau of Circulations, there are 33 specialized sports magazines (including *Climbing*, *Surfing*, and *Ski Magazine*), 32 fishing or hunting magazines (including *American Hunter*, *Guns & Ammo*, and *Game & Fish Magazine*), 37 automotive magazines (including *Motor Trend* and *Car and Driver*), 10 boating or yachting magazines (including *Boating*), and 4 aviation magazines (including *Flying*) in regular circulation. See Audit Bureau of Circulations, E-Circ Database, Consumer Magazines, <http://abcas3.accessabc.com/ecirc/magform.asp> (last visited Feb. 27, 2010) (on file with the Harvard Law School Library). These magazines frequently include items concerning product safety, product malfunctions, and recalls. See, e.g., *Bailout Bottles*, SCUBA DIVING MAG., Oct. 18, 2006, <http://www.scubadiving.com/gear/2006/10/bailout-bottles> (rating several emergency air supply bottles for scuba divers); *Bindings*, SKI MAG., Sept. 2005, <http://www.skinet.com/ski/gear/2005/09/bindings> (discussing safety features of ski bindings); *Smith & Wesson Issues Product Safety Warning and Recall Notice*, SHOOTING TIMES, Sept. 21, 2006, [http://www.shootingtimes.com/swpr\\_092206](http://www.shootingtimes.com/swpr_092206).

ports tests a broad range of products and evaluates their risks.<sup>26</sup> The subscriber base of these magazines is approximately 45 million individuals.<sup>27</sup> Daily television news programs report on major product defects and accidents, and feature news programs, such as *60 Minutes* and *20/20*, often include segments on product problems.<sup>28</sup> The combined viewership of the three network evening news programs, *Fox News*, and *CNN* exceeds 25 million people,<sup>29</sup> and that of *60 Minutes* and *20/20* is about 18 million.<sup>30</sup> The internet also allows consumers to

---

<sup>26</sup> For instance, an electronic search of the print edition of *Consumer Reports* returned 154 articles containing the word “safety” in the calendar year 2008, including articles on the safety of pet food, cooktop stoves, and vacuum cleaners. See, e.g., *Salmonella Taints Pet Food*, CONSUMER REP., Dec. 2008, at 15 (noting the recall of dog and cat food due to salmonella contamination); *Speedier Cooktops and Wall Ovens*, CONSUMER REP., Dec. 2008, at 59 (discussing the safety features of a Miele cooktop); *Vacuums: Our Tests Show Several Standouts and Some Big Names To Skip*, CONSUMER REP., Oct. 2008, at 34, 35 (rating two vacuum cleaners as “Not Acceptable” because of safety hazards).

<sup>27</sup> According to the Audit Bureau of Circulations, the total paid circulations for *Newsweek*, *U.S. News & World Report*, and *Time* during the six-month period ending December 31, 2009, were approximately 1.97 million, 1.19 million, and 3.33 million, respectively. *Motor Trend* had a total paid circulation of approximately 1.14 million, while *Guns & Ammo* had a total paid circulation of 413,239. The total circulation for the special interest magazine categories identified *supra* note 25 was approximately 30.02 million. See Audit Bureau of Circulations, E-Circ Database, Consumer Magazines, <http://abcas3.accessabc.com/ecirc/magform.asp> (last visited Feb. 27, 2010) (on file with Harvard Law School Library). *Consumer Reports* magazine, ConsumerReports.org, and the newsletters *Consumer Reports on Health* and *Consumer Reports Money Adviser* have combined subscriptions of more than 8 million. See ConsumerReports.org, Our Mission, <http://www.consumerreports.org/cro/aboutus/mission/overview/index.htm> (last visited Feb. 27, 2010). Of course, there is some overlap among the subscribers of the magazines discussed in this note.

<sup>28</sup> See, e.g., *20/20: After the Crash* (ABC television broadcast July 16, 1999) (reporting on automobile gas tanks exploding due to design defects); *20/20: Toys in Trouble?* (ABC television broadcast Nov. 13, 1998) (addressing the presence of the possibly harmful chemical phthalate in soft plastic toys); *60 Minutes: Is Your Car Safe?* (CBS television broadcast June 11, 1978) (discussing problems with the Ford Pinto’s gas tank), cited in W. PAGE KEETON ET AL., PRODUCTS LIABILITY AND SAFETY 841 (2d ed. 1989); *60 Minutes: Testing, Testing, Testing: Weapons Are the Only Manufactured Consumer Products Not Subject to Safety Inspections* (CBS television broadcast Mar. 20, 1994) (covering handgun safety); *CBS Evening News* (CBS television broadcast Nov. 20, 2007) (addressing lead levels in popular toys, including Dora the Explorer and Spongebob Squarepants items).

<sup>29</sup> In 2008, the viewership of the ABC evening news program averaged 8.1 million; that of CBS averaged 6.1 million; and that of NBC averaged 8.6 million. Pew Project for Excellence in Journalism, *The State of the News Media*, <http://www.stateofthemediamedia.org/2009/index.htm> (follow “Network TV Audience” hyperlink) (last visited Feb. 27, 2010). The average primetime audience in 2008 of Fox News was 2.02 million and that of CNN was 1.05 million. *Id.* (follow “Cable TV Audience” hyperlink).

<sup>30</sup> In 2008, the audience of *60 Minutes* averaged 11.9 million, and that of *20/20* averaged 6.1 million. *Id.* (follow “Network TV News Magazines” hyperlink).

easily locate evaluations of the safety of most widely sold products,<sup>31</sup> and many government agencies provide evaluations of product risks.<sup>32</sup>

Obviously, consumers will only be exposed to a small fraction of this information due to constraints on their time. Furthermore, individuals might not properly evaluate the information that they do have about product risks because they are subject to various cognitive biases.<sup>33</sup> Hence, the availability of extensive information about product

<sup>31</sup> One way to find information about the safety of a particular product is to search for it using Google. For instance, a consumer can obtain data on the safety of the Toyota Tundra truck by entering the search terms, "safety toyota tundra 2008" into Google. The results include the Insurance Institute for Highway Safety's test results for the Tundra. *See* Ins. Inst. for Highway Safety, Toyota Tundra, <http://www.iihs.org/ratings/ratingsbyseries.aspx?id=444> (last visited Feb. 27, 2010). A Google search for "bike helmet safety" leads to, among other sites, the Bicycle Safety Helmet Institute, which provides ratings of bicycle helmets. *See* Bicycle Helmet Safety Inst., <http://www.helmets.org> (last visited Feb. 27, 2010). Another way to find product safety information is to examine the web sites of organizations that address this topic. *See, e.g.*, Ctr. For Science in the Pub. Interest, <http://www.cspinet.org> (last visited Feb. 27, 2010) (evaluating food safety); Consumeraffairs.com, <http://www.consumeraffairs.com> (last visited Feb. 27, 2010) (supplying information about product recalls); Consumers Union, <http://www.consumersunion.org> (last visited Feb. 27, 2010) (assessing the safety of automobiles, household appliances, and many other products); Flight Safety Found., Aviation Safety Network, <http://aviation-safety.net/database> (last visited Feb. 27, 2010) (providing aircraft safety incident data, including by aircraft type); Ins. Inst. for Highway Safety, <http://www.iihs.org> (last visited Feb. 27, 2010) (supplying crash test ratings for vehicles); W.A.T.C.H. World Against Toys Causing Harm, <http://www.toysafety.org> (last visited Feb. 27, 2010) (reporting on toy safety). Other sources of safety information are websites of news outlets. *See, e.g.*, MOTOR TREND BUYER'S GUIDE, New Car Safety Ratings & Reports, [http://www.motortrend.com/new\\_cars/safety\\_ratings/index.html](http://www.motortrend.com/new_cars/safety_ratings/index.html) (last visited Feb. 27, 2010) (reporting vehicle safety and crash test ratings); NEW YORK TIMES, HEALTH NEWS, <http://health.nytimes.com/pages/health> (last visited Feb. 27, 2010) (supplying health care news, including articles on drug safety); WALL STREET JOURNAL, Auto Industry News, <http://online.wsj.com/public/page/news-autos-automotive.html> (last visited Feb. 27, 2010) (reviewing cars and motorcycles, including their safety). Additional sources of safety information about products are the websites of specialty organizations and user groups. *See, e.g.*, Aircraft Owners & Pilots Assoc. Air Safety Found., Safety Highlights, <http://www.aopa.org/asf/publications/highlights.html> (last visited Feb. 27, 2010) (providing aircraft reviews); CarGurus.com, <http://www.cargurus.com> (last visited Feb. 27, 2010) (evaluating new and used cars, including their safety); WebMD, Drugs & Medications A-Z, <http://www.webmd.com/drugs/index-drugs.aspx?> (last visited Feb. 27, 2010) (supplying safety information for over-the-counter and prescription drugs).

<sup>32</sup> For example, the National Highway Traffic Safety Administration (NHTSA), the Consumer Product Safety Commission (CPSC), and the Food and Drug Administration (FDA) furnish safety information to the public about a broad range of products. *See* Nat'l Highway Traffic Safety Admin., <http://www.safercar.gov> (last visited Feb. 27, 2010) (providing ratings of tire safety, crash test results, rollover ratings, and a database of recalls); U.S. Consumer Prod. Safety Comm'n, CPSC Publications, [http://www.cpsc.gov/cpscpub/pubs/pub\\_idx.html](http://www.cpsc.gov/cpscpub/pubs/pub_idx.html) (last visited Feb. 27, 2010) (offering safety assessments of numerous products, including bicycles, children's furniture, and power equipment); U.S. Food & Drug Admin., Medical Product Safety Information, <http://www.fda.gov/Safety/Medwatch/SafetyInformation/default.htm> (last visited Feb. 27, 2010) (supplying safety information about drugs approved by the FDA, as well as a list of medical device recalls).

<sup>33</sup> *See, e.g.*, Christine Jolls, Cass R. Sunstein & Richard Thaler, *A Behavioral Approach to Law and Economics*, 50 STAN. L. REV. 1471, 1476-81 (1998) (discussing common cognitive biases); Matthew Rabin, *Psychology and Economics*, 36 J. ECON. LITERATURE 11, 24-31 (1998) (same).

risks does not necessarily imply that consumers will be well-informed about these risks.

Consumers should have a relatively good assessment, however, of the risks of many widely sold products. A primary reason is that the media and regulators have naturally strong incentives to identify and publicize the risks of such products. If there is a safety problem with a popular drug or an automobile, tens of thousands of individuals or more could be affected, which the media would be eager to report — as our examples of Tylenol and Audi automobiles illustrate<sup>34</sup> — and which would probably attract the attention of regulators.

The influence of market forces on product safety therefore is likely to be particularly important for widely sold products. Moreover, firms that sell products in large volume have more to lose if consumers think that their products are dangerous and more to gain if consumers believe that their products are safe, giving them a greater incentive to invest in product safety. Additionally, large firms tend to be especially concerned about their reputation for safety because they often offer multiple product lines and have long time horizons.

Conversely, consumer knowledge about product risks should be less good for products that are not widely sold because media and regulatory interest in these products will be lower. For instance, a problem with space heaters made by a local manufacturer and sold in limited volume would be unlikely to receive more than brief mention by the media or to be noticed by regulators. Hence, market forces usually will be less effective for products that are not widely sold and the companies that sell these products will tend to have weaker incentives to increase their safety.

The preceding observations about products that are, and are not, widely sold only describe central tendencies. It could be that consumers do not have good information about the risks of a widely sold product, especially if, as we noted above, the harm the product causes is small or infrequent, is difficult to attribute to its source, or occurs

---

*See generally* JUDGMENT UNDER UNCERTAINTY: HEURISTICS AND BIASES (Daniel Kahneman, Paul Slovic & Amos Tversky eds., 1982). When individuals misperceive risks, they sometimes underestimate and sometimes overestimate them. *See, e.g.,* Sarah Lichtenstein et al., *Judged Frequency of Lethal Events*, 4 J. EXPERIMENTAL PSYCHOL. 551 (1978) (reporting that individuals systematically overestimate the frequency of death from unlikely events and underestimate the frequency of death from likely causes); Paul Slovic, Baruch Fischhoff & Sarah Lichtenstein, *Facts and Fears: Understanding Perceived Risk*, in SOCIETAL RISK ASSESSMENT 181, 193 tbl.3 (Richard C. Schwing & Walter A. Albers, Jr. eds., 1980) (finding that individuals accurately predicted the number of annual fatalities due to home appliances, underestimated those due to X-rays, and overestimated the danger of vaccinations); Michael S. Wogalter, Douglas J. Brems & Elaine G. Martin, *Risk Perception of Common Consumer Products: Judgments of Accident Frequency and Precautionary Intent*, 24 J. SAFETY RES. 97, 100 (1993) (reporting that individuals overestimate low-probability product risks and underestimate high-probability product risks).

<sup>34</sup> *See supra* notes 13 and 16.

many years after the product's use. Thus, market forces might not induce the manufacturer of a widely sold product to improve its safety. It could also be the case that consumers do have good information about a product that is not widely sold. The customers of a neighborhood restaurant, for instance, might be expected to learn about a frequent problem of food poisoning there by word of mouth. Thus, market forces could lead a seller of a product that is sold to a limited number of individuals to take care to reduce the risk of harm.

### *B. Regulation of Product Risk*

In addition to market forces, government regulation affects the safety of a broad range of products,<sup>35</sup> and we now briefly describe several areas of regulation.

*Automobiles.* Automobile safety regulations are extensive in nature and include, for example, requirements regarding seatbelts, crashworthiness, fuel tank construction, and windshield and tire strength.<sup>36</sup> These requirements are primarily enforced by the National Highway Traffic Safety Administration (NHTSA),<sup>37</sup> whose annual budget exceeds \$856 million.<sup>38</sup> Firms are subject to sanctions for violating automobile safety regulations<sup>39</sup> and their executives are potentially subject to criminal liability.<sup>40</sup>

*Pharmaceuticals.* Pharmaceutical products must satisfy rigorous testing and labeling requirements that are overseen by the U.S. Food and Drug Administration (FDA).<sup>41</sup> The FDA's Center for Drug Eval-

<sup>35</sup> See generally STEPHEN BREYER, REGULATION AND ITS REFORM 96-119 (1982); CASS R. SUNSTEIN, RISK AND REASON (2002); W. KIP VISCUSI, JOSEPH E. HARRINGTON, JR. & JOHN M. VERNON, ECONOMICS OF REGULATION AND ANTITRUST 789-826 (4th ed. 2005).

<sup>36</sup> See ROBERT W. CRANDALL ET AL., REGULATING THE AUTOMOBILE 34 tbl.3-2 (1986); Murray Weidenbaum, *Regulation of the Automobile: Extensive and Growing*, EXECUTIVE SPEECHES, Dec. 1998-Jan. 1999, at 14. On the specific requirements mentioned in the text, see 49 C.F.R. § 571.109 (2008) for regulations on tire strength, endurance, and dimensions; §§ 571.201-.224 for regulations on crashworthiness, including seat belt and windshield mounting requirements; and §§ 571.301-.304 for regulations on fuel system integrity and fire prevention.

<sup>37</sup> See 49 U.S.C. §§ 322, 30111 (2006) (granting Secretary of Transportation power to prescribe motor vehicle safety standards); 49 C.F.R. § 1.50 (delegating authority to NHTSA Administrator); see also 49 U.S.C. § 30166 (granting Secretary of Transportation authority to conduct inspections and investigations as necessary to enforce motor vehicle safety regulations). For a detailed account of the development of NHTSA, see JERRY L. MASHAW & DAVID L. HARFST, THE STRUGGLE FOR AUTO SAFETY (1990).

<sup>38</sup> DEP'T OF TRANSP., FISCAL YEAR 2010 BUDGET HIGHLIGHTS 18 (2009), <http://www.dot.gov/budget/2010/bib2010.pdf>.

<sup>39</sup> 49 U.S.C. § 30165(a)(1) (authorizing financial penalties of up to \$5000 per violation).

<sup>40</sup> *Id.* § 30170(a) (authorizing an imprisonment sentence of up to fifteen years for falsifying or withholding information relating to motor vehicle safety violations that cause death or serious bodily injury).

<sup>41</sup> See FDA REGULATORY AFFAIRS: A GUIDE FOR PRESCRIPTION DRUGS, MEDICAL DEVICES, AND BIOLOGICS (Douglas J. Pisano & David Mantus eds., 2004); SUZANNE PARISIAN, FDA: INSIDE AND OUT (2001); U.S. Food & Drug Admin., Legislation,

uation and Research has a staff of approximately 3000 employees and an annual budget of about \$760 million.<sup>42</sup> New pharmaceuticals generally are subject to four phases of clinical trials to ensure that they are safe and effective.<sup>43</sup> Prescription drugs must satisfy FDA labeling requirements and include information about their proper use.<sup>44</sup> Significant violations of FDA drug regulations are subject to fines and imprisonment.<sup>45</sup>

*Aircraft.* Stringent aircraft safety standards, set by the Federal Aviation Administration (FAA), govern the manufacture,<sup>46</sup> maintenance,<sup>47</sup> and airworthiness<sup>48</sup> of all aircraft. Every accident involving a civil aircraft is investigated at the initiative of the National Transportation Safety Board (NTSB).<sup>49</sup> Violations of aircraft regulations may result in seizure of noncompliant aircraft, civil penalties, and criminal sanctions.<sup>50</sup>

*Consumer products.* Safety standards apply to numerous consumer products, such as toys, cigarette lighters, baby cribs, and household

---

<http://www.fda.gov/RegulatoryInformation/Legislation/default.htm> (last visited Feb. 27, 2010); see also ARTHUR A. DAEMMRICH, *PHARMACOPOLITICS: DRUG REGULATION IN THE UNITED STATES AND GERMANY* (2004).

<sup>42</sup> U.S. FOOD & DRUG ADMIN., *FISCAL YEAR 2010 CONGRESSIONAL JUSTIFICATION* 77 (2009), available at <http://www.fda.gov/AboutFDA/ReportsManualsForms/Reports/BudgetReports/ucm153374.htm>.

<sup>43</sup> See BERT SPILKER, *GUIDE TO CLINICAL TRIALS* xxii–xxiii (1991); Nat'l Insts. of Health, *Understanding Clinical Trials*, <http://www.nlm.nih.gov/services/ctphases.html> (last visited Feb. 27, 2010); see also Brian Vastag, *New Clinical Trials Policy at FDA*, 24 *NATURE BIOTECHNOLOGY* 1043, 1043 (2006).

<sup>44</sup> See, e.g., *Requirements on Content and Format of Labeling for Human Prescription Drug and Biological Products*, 71 Fed. Reg. 3922 (Jan. 24, 2006) (codified at 21 C.F.R. pts. 201, 314, 601 (2009)) (reviewing and amending FDA regulations governing labeling requirements for prescription drug products).

<sup>45</sup> 21 U.S.C. § 333(b) (2006) (authorizing maximum fines ranging from \$250,000 to \$1,000,000 and imprisonment for up to ten years).

<sup>46</sup> See 14 C.F.R. § 21.6 (2009) (requiring manufacturers of aircraft, aircraft engines, or propellers to obtain a special “type certificate”); *id.* §§ 21.121–.165 (requiring manufacturers operating under type or production certificates to set up inspection, quality control, and testing systems).

<sup>47</sup> See *id.* §§ 43.1–.17 (requiring detailed inspection and maintenance records and that inspection and maintenance operations be performed by FAA-certified mechanics, repairmen, or air carrier operators).

<sup>48</sup> See *id.* §§ 23.1–39.27 (setting out detailed airworthiness requirements, including provisions for structure, weight distribution, speed, performance, roll and stability, force and torque limits, mechanics, and control systems); see also Fed. Aviation Admin., *Airworthiness Directives*, [http://www.airweb.faa.gov/Regulatory\\_and\\_Guidance\\_Library/rgAD.nsf/Frameset?OpenPage](http://www.airweb.faa.gov/Regulatory_and_Guidance_Library/rgAD.nsf/Frameset?OpenPage) (last visited Feb. 27, 2010) (collecting airworthiness directives requiring special provisions for particular aircraft and parts).

<sup>49</sup> 49 U.S.C. § 1132(a)(1)(A) (2006) (requiring NTSB to investigate each accident involving civil aircraft); Nat'l Transp. Safety Bd., *History and Mission*, [http://www.nts.gov/Abt\\_NTSB/history.htm](http://www.nts.gov/Abt_NTSB/history.htm) (last visited Feb. 27, 2010) (noting NTSB's mission to investigate all U.S. civil aviation accidents).

<sup>50</sup> See 14 C.F.R. §§ 13.13–.29 (providing various enforcement measures for violations of FAA regulations).



chemicals. These standards are developed and enforced by the Consumer Product Safety Commission (CPSC), which was created “to protect the public against unreasonable risks of injuries associated with consumer products.”<sup>51</sup> In addition to imposing civil fines for violations,<sup>52</sup> the CPSC has the authority to order the recall of unsafe products.<sup>53</sup>

Regulations of the type just noted have beneficially affected the safety of many products. For example, automobile safety standards have been determined to have significantly reduced the number of deaths due to collisions.<sup>54</sup> Similarly, FAA safety requirements have been found to have played an important role in lowering general aviation aircraft accidents.<sup>55</sup> There is evidence that regulation has reduced risk in other areas as well.<sup>56</sup>

Safety regulation is likely to be more effective for widely sold products, such as automobiles, pharmaceuticals, and aircraft, than for products whose distribution is limited. One reason is that regulators will be more concerned about the risks of products sold in high volume, as mentioned in the previous section, and thus will tend to invest substantial effort in regulating them. A second reason is that regulators will obtain more information about a product’s hazards if many members of the public are using the product and then reporting problems after suffering from its defects.

---

<sup>51</sup> Consumer Product Safety Act, Pub. L. No. 92-573, § 2(b)(1), 86 Stat. 1207, 1208 (1972) (codified at 15 U.S.C. § 2051(b)(1) (2006)) (establishing the Consumer Product Safety Commission). For a list of more than 15,000 consumer products regulated by the CPSC, see U.S. Consumer Prod. Safety Comm’n, Regulated Products, <http://www.cpsc.gov/businfo/reg1.html> (last visited Feb. 27, 2010).

<sup>52</sup> 15 U.S.C. § 2069 (providing for civil penalties).

<sup>53</sup> *Id.* § 2071 (providing for injunctive enforcement and seizure upon action brought by the Commission).

<sup>54</sup> See, e.g., CRANDALL ET AL., *supra* note 36, at 51, 55–68 (conducting statistical analysis in order to estimate the influence of automobile safety regulation and finding “a very large effect of the improved safety design of automobiles since 1966 upon occupant death rates,” *id.* at 66); John D. Graham, *Product Liability and Motor Vehicle Safety*, in THE LIABILITY MAZE 120, 182–83 (Peter W. Huber & Robert E. Litan eds., 1991) (finding NHTSA regulation to be a main factor contributing to a decrease in motor vehicle fatalities); Lloyd D. Orr, *The Effectiveness of Automobile Safety Regulation: Evidence from the FARS Data*, 74 AM. J. PUB. HEALTH 1384, 1387 (1984) (analyzing data from the Fatal Accident Reporting System for the years 1975 through 1978 and concluding that as many as 9,200 lives were saved by new automobile regulations).

<sup>55</sup> See U.S. GEN. ACCOUNTING OFFICE, GENERAL AVIATION 8–9, 56–61 (2001) (reviewing numerous FAA initiatives that improve general aviation safety); Aircraft Owners & Pilots Assoc., Learn To Fly: Is It Safe?, <http://flighttraining.aopa.org/learntofly/safe/index.html> (last visited Feb. 27, 2010) (reviewing various factors, including FAA regulations, contributing to the decline in the accident rate per flying hour since 1950).

<sup>56</sup> See U.S. Consumer Prod. Safety Comm’n, Success Stories Index, <http://www.cpsc.gov/cpscpub/pubs/success/index.html> (last visited Feb. 27, 2010) (describing the safety benefits of regulations concerning, for example, cigarette lighters, cribs, hair dryers, and bicycles).

Of course, regulation will be far from perfect due to the limited knowledge of regulators, their budgetary constraints, and the possibility that they may be captured by the firms that they are responsible for overseeing.<sup>57</sup> Consistent with these observations, some studies have found regulation to be ineffective or of limited value in certain contexts.<sup>58</sup> Our point is not that regulation will serve as a general cure for product safety problems, but rather that it contributes in a significant way to reducing many product risks.

### C. Risk Reduction Accomplished by Product Liability

Product liability is applied through three primary doctrines.<sup>59</sup> Under the design defect doctrine, a firm can be held liable for accidents caused by its product if the design of the product was defective, meaning, essentially, that a different design could have been employed that was safer and not excessively costly.<sup>60</sup> Under the manufacturing defect doctrine, a firm can be held liable for an accident if the particular unit that caused the accident was not manufactured according to the intended design.<sup>61</sup> Under the failure to warn doctrine, a firm can be

<sup>57</sup> See, e.g., Michael E. Levine, *Regulatory Capture*, in 3 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 267 (Peter Newman ed., 1998); Richard A. Posner, *Theories of Economic Regulation*, 5 BELL J. ECON. & MGMT. SCI. 335 (1974) (reviewing versions of capture theory); Robert D. Tollison, *Regulation and Interest Groups*, in REGULATION 59 (Jack High ed., 1991).

<sup>58</sup> See, e.g., STEPHEN BREYER, *BREAKING THE VICIOUS CIRCLE: TOWARD EFFECTIVE RISK REGULATION* 12–14 (1993) (discussing the limited efficacy of asbestos cleanup regulation); W. Kip Viscusi, *Consumer Behavior and the Safety Effects of Product Safety Regulation*, 28 J.L. & ECON. 527, 531 (1985) (“The impact of current CPSC regulations is likely to be quite small, and even if the agency were much more active than it now is, it is doubtful whether there would be a dramatic impact on product safety. The absence of any stark shift in product safety after the advent of the CPSC is borne out by the accident trend data . . .”).

<sup>59</sup> See generally RESTATEMENT (THIRD), *supra* note 1, § 2; DOBBS, *supra* note 1, § 355, at 910–17; OWEN, *supra* note 1, §§ 1.3, 7.1–9.6, at 23–48, 432–620.

<sup>60</sup> Design defect occurs when “the manufacturer’s design specifications . . . themselves create unreasonable risks. . . . [T]he test is whether a reasonable alternative design would, at a reasonable cost, have reduced the foreseeable risks of harm posed by the product and, if so, whether the omission of the alternative design . . . rendered the product not reasonably safe.” RESTATEMENT (THIRD), *supra* note 1, § 2 cmt. d; see also RESTATEMENT (SECOND), *supra* note 1, § 398 (manufacturer is liable “for physical harm caused by his failure to exercise reasonable care in the adoption of a safe plan or design”). “[A] design defect occurs when the intended design of the product line itself is inadequate and needlessly dangerous.” DOBBS, *supra* note 1, § 355, at 980. Because design defect cases concern an entire product line, if a defect is found, then “every unit in the same product line is potentially defective” and the manufacturer is liable for harms caused by all products in the line. RESTATEMENT (THIRD), *supra* note 1, § 1 cmt. a.

<sup>61</sup> See RESTATEMENT (SECOND), *supra* note 1, § 395 (“A manufacturer who fails to exercise reasonable care in the manufacture of a chattel . . . is subject to liability for physical harm caused to [those who are injured] by its lawful use in a manner and for a purpose for which it is supplied.”). The *Restatement (Third)* defines a manufacturing defect as “a depart[ure] from [the product’s] intended design even though all possible care was exercised in the preparation and marketing of the product.” RESTATEMENT (THIRD), *supra* note 1, § 2(a). A manufacturing de-

held liable if it failed to provide a reasonable warning about the riskiness of the product.<sup>62</sup>

Even though product liability might lower a product risk in the absence of market forces and regulation, it will turn out to be superfluous if a desirable safety precaution has already been taken because of these two factors. Consider, for example, electronic stability control in automobiles, a feature that can reduce the risk of skidding and rollovers. Market pressures could lead to adoption of this feature if consumers appreciate its value, or a regulator might require it. Hence, product liability might not be necessary to induce automobile manufacturers to adopt electronic stability control — and, apparently, market forces have played a role in stimulating this improvement.<sup>63</sup>

It may happen, of course, that neither market forces nor regulation results in a beneficial reduction of risk for the reasons that we discussed in sections A and B. Then, product liability may be efficacious. Consider a shield on a lawnmower that could prevent stones from being ejected by its cutting blades. Market forces would not induce manufacturers to employ the shield if consumers do not understand its benefits, and regulators might not require the shield for similar reasons. But the prospect of being found liable for a defectively designed lawnmower might induce manufacturers to include the shield.<sup>64</sup>

Another reason that product liability could be effective is indirect — that product liability litigation may result in publicity about product problems and thereby enhance market forces and spur regula-

---

fect is a “flaw in the manufacturing process, resulting in a product that differs from the manufacturer’s intended result.” *Brown v. Superior Court*, 751 P.2d 470, 474 (Cal. 1988). Unlike a design defect, a manufacturing defect “is a random failing or imperfection.” DOBBS, *supra* note 1, § 355, at 979. Common examples include “products that are physically flawed, damaged, or incorrectly assembled.” RESTATEMENT (THIRD), *supra* note 1, § 2 cmt. c.

<sup>62</sup> A product is deemed “defective because of inadequate instructions or warnings when the foreseeable risks of harm posed by the product could have been reduced or avoided by the provision of reasonable instructions or warnings by the seller or other distributor . . . and the omission of the instructions or warnings renders the product not reasonably safe.” RESTATEMENT (THIRD), *supra* note 1, § 2(c); *see also* RESTATEMENT (SECOND), *supra* note 1, § 388 (holding manufacturers liable for “fail[ing] to exercise reasonable care to inform [those for whose use the chattel is supplied] of its dangerous condition or of the facts which make it likely to be dangerous”).

<sup>63</sup> *See* Joseph B. White, *Car-Accident Deaths Fell in '08*, WALL ST. J., Feb. 10, 2009, at D8 (“More recently, auto makers have been going beyond what the law requires, because that is what consumers are demanding. The increasing use of stability controls and antirollover systems is an example. Electronic stability controls will be mandated on new vehicles by 2012, but many new vehicles have this technology today.”).

<sup>64</sup> Yet product liability will not necessarily be successful in taking up the slack left by market forces and regulation. Notably, in a product liability lawsuit a court might not recognize a safety precaution that is in fact cost-effective, such as the shield for lawnmowers. This possibility is plausible because the factor that would often lead the market and regulators to fail to recognize the value of a safety precaution — lack of information about its risk-reducing effects — might also lead a court to fail to recognize its value.

tion. If adverse reactions to a drug would not come to the attention of the media or regulators unless product liability suits were brought, then product liability could be responsible for lower sales of the drug and regulatory action to remedy its dangers.

The degree to which product liability reduces product risk is therefore an empirical question, which we now address. In an early and widely cited study, Professor George Priest examined accident statistics during the 1970s and 1980s, a period when the scope of product liability law grew substantially and the volume of product liability litigation increased greatly. However, he found no discernible effect of the enhanced product liability activity on accident rates.<sup>65</sup> A significant qualification concerning the interpretation of his finding, however, stems from the fact that the accident rates he considered were for general categories of accidents, and that the accidents were not necessarily product-related. Hence, a small decline in product-related accident rates might not have been revealed by his data.<sup>66</sup> But a large decline would have had a measurable effect unless product-related accidents were a small fraction of all accidents;<sup>67</sup> we therefore find the Priest study suggestive.

Several studies of the effect of product liability in particular industries, which we summarize below, also examine whether product liability affected accident rates during the period when the volume of product liability litigation increased in a marked way. These studies conclude that product liability has had no noticeable impact on accident rates and thus tend to confirm Priest's findings.

*General aviation aircraft.*<sup>68</sup> In separate investigations, Andrew Craig and Robert Martin assessed the influence of product liability on the safety of general aviation aircraft.<sup>69</sup> They observed that the liabil-

---

<sup>65</sup> See George L. Priest, *Products Liability Law and the Accident Rate*, in *LIABILITY: PERSPECTIVES AND POLICY* 184, 187–94 (Robert E. Litan & Clifford Winston eds., 1988).

<sup>66</sup> This qualification of Priest's study was made by DON DEWEES, DAVID DUFF & MICHAEL TREBILCOCK, *EXPLORING THE DOMAIN OF ACCIDENT LAW* 203, 205 (1996).

<sup>67</sup> Dewees and his coauthors observe that "either accidents caused by defective products are a small percentage of all product-related accidents or the tort system has not significantly reduced defective product-related accidents, or both." *Id.* at 203.

<sup>68</sup> General aviation aircraft are aircraft with a maximum seating capacity of fewer than twenty passengers that are not engaged in regularly scheduled airline operations. General Aviation Revitalization Act of 1994, Pub. L. No. 103-298, § 2(c), 108 Stat. 1552, 1553 (codified at 49 U.S.C. § 40101 (2006)). There were 231,607 such aircraft in active use in 2007. GEN. AVIATION MFRS. ASS'N, 2008 GENERAL AVIATION STATISTICAL DATABOOK & INDUSTRY OUTLOOK 28 (2008), available at [http://www.gama.aero/files/2008\\_general\\_aviation\\_statistical\\_databook\\_indust\\_499b0dc37b.pdf](http://www.gama.aero/files/2008_general_aviation_statistical_databook_indust_499b0dc37b.pdf). In 2008, general aviation aircraft accounted for approximately 44% of all aviation fatalities in the United States. See Nat'l Transp. Safety Bd., *Aviation Accident Statistics*, at tbl.1, <http://www.nts.gov/aviation/stats.htm> (last visited Feb. 27, 2010).

<sup>69</sup> Andrew Craig, *Product Liability and Safety in General Aviation*, in *THE LIABILITY MAZE*, *supra* note 54, at 456; Robert Martin, *General Aviation Manufacturing: An Industry Under Siege*, in *THE LIABILITY MAZE*, *supra* note 54, at 478.

ity and defense expenditures of manufacturers of these aircraft rose sharply from the 1970s to the 1980s, growing approximately nine-fold.<sup>70</sup> However, the rate of fatal accidents did not display a decline that could be linked to the sharp increase in liability. The accident rate had been falling for many years, and in the years during and following the increase in liability the accident rate did not decline more steeply; it actually fell less steeply.<sup>71</sup> Craig and Martin both concluded that heightened liability apparently did not reduce general aviation aircraft fatalities.<sup>72</sup>

One reason that product liability might not be expected to affect the safety of general aviation aircraft very much is obvious — purchasers of aircraft have a pronounced incentive to obtain information about the safety records of the planes they will be flying. Hence, market forces are likely to play a significant role in inducing aircraft manufacturers to provide safe airplanes. A second reason that product liability might result in little improvement to the safety of aircraft is that FAA regulation is extensive, as mentioned above.

*Motor vehicles.* Professor John Graham employed regression analysis to determine whether product liability reduced motor vehicle fatalities during the period 1950–1988.<sup>73</sup> He found essentially no effect and concluded that if there is a beneficial influence of product liability on motor vehicle accidents, it is too small to be detected using aggregate data.<sup>74</sup>

Graham also undertook five case studies of specific safety problems in motor vehicles. The studies concerned defects related to the fuel

<sup>70</sup> Martin, *supra* note 69, at 484–85 (reporting that the aviation industry's costs for defending against and paying product liability claims rose from \$24 million in 1976 to \$210 million in 1986); see also Craig, *supra* note 69, at 457 (observing that liability costs per fatality rose from about \$17,000 in 1977 to about \$223,600 in 1985).

<sup>71</sup> Martin used regression analysis to estimate the trend in fatal accident rates for general aviation from 1950–1969, when aircraft manufacturers were not subject to strict liability, and from 1970–1989, when a strict liability regime was in place. See Martin, *supra* note 69, at 494 fig.13-1. He observed that “[Figure 13-1] displays a sharp downward trend for the twenty years that were free of the influence of strict liability, in contrast to a significantly flatter downward trend in the accident rate over the twenty years after the intervention of strict liability and the litigation it has spawned.” *Id.* at 493; see also Craig, *supra* note 69, at 457–58.

<sup>72</sup> Craig, *supra* note 69, at 457 (“Clearly, therefore, the aggregate accident and liability cost data do not support the view that liability litigation has enhanced safety in this industry.”); Martin, *supra* note 69, at 493 (“These data indicate that strict liability has demonstrated no tendency to promote the safety of flight . . . .”); see also Randy A. Nelson & James N. Drews, *Strict Product Liability and Safety: Evidence from the General Aviation Market*, 46 ECON. INQUIRY 425, 436 (2008) (finding that strict product liability actually increased the accident rate of general aviation aircraft because it depressed sales of new planes and led individuals to fly older and more dangerous planes).

<sup>73</sup> Graham, *supra* note 54, at 183, 186–87.

<sup>74</sup> To be precise, Graham found that higher liability was positively associated with a higher accident rate, but the effect was not statistically significant. *Id.* at 182–83.

tank of the Ford Pinto,<sup>75</sup> transmissions in Ford vehicles,<sup>76</sup> the roll bar of the Jeep CJ,<sup>77</sup> airbags and seat belts,<sup>78</sup> and all-terrain vehicles.<sup>79</sup> Graham found that when safety problems arose, manufacturers responded primarily because of a concern about their reputations with consumers and because of pressure from regulators.<sup>80</sup> For example, after fuel tank explosions in the Ford Pinto were widely publicized, Ford voluntarily altered its fuel tank design and also made changes in response to increased regulatory requirements of the NHTSA.<sup>81</sup> Significantly, Graham found that in all of the case studies product liability was not necessary for the stimulation of the specific safety improvements that were adopted.<sup>82</sup> He noted, however, that product liability might have been sufficient to induce certain safety improvements or at least to have hastened them,<sup>83</sup> especially because the adverse publicity accompanying litigation can spur market forces.<sup>84</sup>

*Childhood vaccines.* Richard Manning studied the effect of product liability on the diphtheria, pertussis, and tetanus (DPT) vaccine.<sup>85</sup> He found that the liability risk borne by manufacturers of DPT increased dramatically from the late 1970s to the late 1980s. Notably, the number of suits filed against such manufacturers in the first three years of the data, 1978–1980, averaged two per year, whereas in the last three years of this data, 1985–1987, the average number of suits was 217.<sup>86</sup> The safety of the DPT vaccine did not, however, change during this period.<sup>87</sup>

<sup>75</sup> *Id.* at 128–37.

<sup>76</sup> *Id.* at 137–44.

<sup>77</sup> *Id.* at 144–55.

<sup>78</sup> *Id.* at 155–68.

<sup>79</sup> *Id.* at 168–80.

<sup>80</sup> *See id.* at 135–37, 155, 163–64, 166, 178–80.

<sup>81</sup> Pinto-related injuries generated significant media attention and negative publicity for Ford. *Id.* at 132, 136. After learning about the Pinto problems, the NHTSA opened a formal investigation, *id.* at 132–34, and in 1977 it instituted stricter fuel tank standards, *id.* at 136. Ford also voluntarily modified the fuel tanks of pre-1977 Pintos not covered by the new requirements. It did so even though, at the time, such behavior might have been seen as an admission of guilt and could have led to greater liability, suggesting that its safety improvements were motivated by factors other than the threat of tort liability. *Id.* at 135–36.

<sup>82</sup> *Id.* at 180 (“In no case did we conclude that liability considerations were necessary to stimulate a specific safety improvement. In other words, other factors would eventually have led to the safety improvement.”); *id.* at 181 tbl.4-3.

<sup>83</sup> *Id.* at 181 tbl.4-3 (identifying instances in which liability was a “sufficient condition” or a “contributory factor” for a safety improvement).

<sup>84</sup> *Id.* at 180–82.

<sup>85</sup> Richard L. Manning, *Changing Rules in Tort Law and the Market for Childhood Vaccines*, 37 J.L. & ECON. 247 (1994).

<sup>86</sup> *Id.* at 258, 259 tbl.3.

<sup>87</sup> *Id.* at 259 (“[T]he DPT vaccine currently in use in this country is essentially the same today as it has been for many years.”).

The preceding synopsis of empirical evidence concerning the effect of product liability on accident rates covers the main statistical studies of which we are aware.<sup>88</sup> No others are mentioned in three reviews of empirical research on the safety benefit of product liability.<sup>89</sup>

Although the empirical evidence that we have summarized is comprised of a limited literature and is subject to criticism,<sup>90</sup> we believe that one may reasonably conclude the following from it. First, the influence of product liability on product safety is likely to have been at most small for the three industries studied, general aviation aircraft, automobiles, and childhood vaccines. Otherwise the investigators presumably would have found a measurable effect of product liability on product safety during the period when product liability litigation increased dramatically. Second, the findings of these industry studies support the prediction that the safety benefit of product liability for many other widely sold products — those for which market forces and regulation have similar importance — will be small. However, market forces and regulation may be more significant for general aviation aircraft, automobiles, and childhood vaccines than for the average widely sold product, implying that the safety benefit of product liability may be lower for these industries than more generally. In any case, when we combine the foregoing conclusions with the points made in sections

<sup>88</sup> Two other statistical studies are Richard S. Higgins, *Producers' Liability and Product-Related Accidents*, 7 J. LEGAL STUD. 299 (1978); and Paul H. Rubin & Joanna M. Shepherd, *Tort Reform and Accidental Deaths*, 50 J.L. & ECON. 221 (2007). Higgins's results do not have a clear meaning; he finds that product liability increases the home accident fatality rate in states with high levels of education but reduces it in states with low levels of education. See Higgins, *supra*, at 320. Rubin and Shepherd's results support the view that product liability does not enhance safety; they find that product liability *increases* accidental deaths by raising the prices of safety-enhancing goods and services and thereby reducing their use. See Rubin & Shepherd, *supra*, at 222.

<sup>89</sup> See DEWEES, DUFF & TREBILCOCK, *supra* note 66, at 202–03, 205; Mark A. Geistfeld, *Products Liability*, in TORT LAW AND ECONOMICS § 11.11, at 301–04 (Michael Faure ed., 2d ed. 2009); Daniel P. Kessler & Daniel L. Rubinfeld, *Empirical Study of the Civil Justice System*, in 1 HANDBOOK OF LAW AND ECONOMICS 343, 363 (A. Mitchell Polinsky & Steven Shavell eds., 2007). Two of these surveys also discuss some studies of reports by executives about their responses to product liability. See DEWEES, DUFF & TREBILCOCK, *supra* note 66, at 197–98; Geistfeld, *supra*, at 303. We do not consider these studies because they do not examine how product liability affects actual accident rates.

<sup>90</sup> Dewees, Duff, and Trebilcock question the import of the Priest study for the reasons observed on p. 1455, though they conclude that “[a]ggregated empirical analysis . . . suggests that increased product liability has not led to any decrease in product-related accidents.” DEWEES, DUFF & TREBILCOCK, *supra* note 66, at 205. Geistfeld makes critical comments about the studies that he reviews, including Priest, *supra* note 65; Graham, *supra* note 54; Higgins, *supra* note 88; and Rubin & Shepherd, *supra* note 88; but he does not discuss the industry studies of Craig, *supra* note 69; Martin, *supra* note 69; and Manning, *supra* note 85. See Geistfeld, *supra* note 89, § 11.11, at 301–04. Kessler and Rubinfeld, after discussing Priest and Martin, observe that “this work is only suggestive, since many other determinants of the accident rate (such as regulatory policy) may have been changing contemporaneously with aggregate trends in products liability pressure.” Kessler & Rubinfeld, *supra* note 89, at 363.

A and B about the contribution of market forces and regulation to product safety, we come to the opinion that a skeptical attitude about the effect of product liability on product safety for widely sold products is warranted.<sup>91</sup>

### III. THE PRICE-SIGNALING BENEFIT OF PRODUCT LIABILITY

Product liability affects consumer well-being not only through its influence on product safety, but also through its impact on product prices. Specifically, because product liability causes prices to rise to reflect product risks, it may beneficially discourage consumers from buying risky products. As noted in the Introduction, we refer to this effect as the price-signaling benefit of product liability (we consider a related price distortion cost in Part V).

#### A. Price-Signaling and Consumer Information

To explain the price-signaling benefit more precisely, we begin with a fundamental proposition of economics that social welfare is maximized if consumers buy a product when and only when its value to them exceeds its costs. Suppose that a consumer places a \$15 value on having a widget, that the widget costs \$10 to produce, and that it causes \$1 of harm on average to its owner. Then social welfare will be raised if the consumer buys the widget because her value of \$15 exceeds the widget's total cost of \$11, comprised of both the direct production costs and the harm the widget causes. Conversely, if a consumer attaches only a \$9 value to the widget, social welfare will be lowered if the consumer buys it. Ideally, every consumer who values a widget more highly than \$11 will buy one, and every consumer who values a widget less highly will not.

If consumers have good information about product risks, they will make the socially correct purchase decisions even in the absence of product liability. In the example, a widget will have a price of \$10 in a regime without product liability because firms will bear only their production costs. Yet if consumers know about the harmfulness of widgets, they will realize that they also will incur \$1 of losses per widget, so they will regard the effective price of a widget as \$11. Consequently, consumers will buy widgets if and only if the value they place on them exceeds \$11, which is the socially ideal outcome.

---

<sup>91</sup> Whereas in this section we have considered the effect of product liability on accident rates, others have examined the influence of product liability on innovation, liability insurance premiums, product prices, product availability, and international competitiveness. See DEWEES, DUFF & TREBILCOCK, *supra* note 66, at 197–205; Kessler & Rubinfeld, *supra* note 89, at 363; Robert E. Litan, *The Safety and Innovation Effects of U.S. Liability Law: The Evidence*, 81 AM. ECON. REV. 59 (1991).



Suppose, however, that consumers underestimate product risks. Assume that they believe that the harm caused by a widget is \$0.75 instead of the true value of \$1. Without product liability, the price of widgets will be \$10, as we just noted, but if consumers mistakenly believe that the harm they will bear per widget is \$0.75, the effective price of a widget will be only \$10.75. As a result, a consumer might buy a widget when doing so is socially undesirable. For instance, a person for whom the value of a widget is \$10.85 will buy one even though its true cost is \$11; her purchase will result in a net loss to her of \$0.15.

If consumers underestimate the harm from products, the imposition of liability on manufacturers will improve consumer purchases by raising product prices. In other words, there will be a price-signaling benefit from product liability. The widget price will rise to \$11 as a result of liability, because manufacturers will incur not only \$10 in production costs per widget, but also \$1 in liability costs (to compensate consumers for their \$1 loss). Hence, with product liability, consumers will buy a widget only if they place a value on it that exceeds \$11, the socially desired outcome.

The magnitude of this price-signaling benefit of product liability depends on the degree of consumer underestimation of product risks. In the example, consumers were assumed to underestimate the \$1 harm by \$0.25. If instead they underestimate the harm by, say, \$0.75, the price-signaling benefit will be greater.

Product liability also can correct for consumer misperceptions if consumers overestimate product risks. In that case they will buy too little of a product in the absence of product liability. Suppose that they incorrectly believe that widgets cause \$1.50 of harm instead of \$1. They will therefore regard the price of a widget as \$11.50 instead of \$11 and buy too few widgets. With product liability, however, the price of a widget will be \$11 and consumers will again purchase widgets only if they value them more highly than \$11, the desired outcome.

In sum, by causing the prices of products to properly reflect accident risks, product liability will lead consumers to purchase the socially ideal quantities of risky products.<sup>92</sup> This price-signaling benefit occurs regardless of whether consumers underestimate or overestimate product risk. But the magnitude of the benefit depends on the degree of consumers' misperception, with the benefit being smaller the better informed are consumers.

---

<sup>92</sup> See Steven Shavell, *Strict Liability Versus Negligence*, 9 J. LEGAL STUD. 1, 12-17, 20-22 (1980); Michael Spence, *Consumer Misperceptions, Product Failure and Producer Liability*, 44 REV. ECON. STUD. 561 (1977).

The analysis in this section presumed for simplicity that the price increase due to product liability reflected only the manufacturer's expected liability payments. More realistically, however, the price increase also will reflect litigation costs. We discuss these costs and their detrimental implication for price-signaling in Part V.

*B. Price-Signaling and First-Party Insurance*

In the preceding section we did not consider first-party accident insurance, but it is relevant to the decisions of consumers whether to purchase risky products.<sup>93</sup> If a consumer has insurance with full coverage, then she knows that if she buys a product and it causes harm, her insurer will compensate her for her losses — she will thus ignore the possibility of product-caused harm in her purchase decision. It follows that she will buy an excessive quantity of risky products in the absence of product liability.

In the earlier example, the price of a widget was \$10 in the absence of liability, and we explained that a consumer who was knowledgeable about the product risk would add \$1 to this price to account for the risk. Hence, she would buy a widget only if it were worth at least \$11 to her. But if she has insurance, she will treat the price of a widget as only \$10 because her insurer would cover her losses, and thus she might buy a widget even when its value to her is less than its full cost of \$11, a socially undesirable outcome.<sup>94</sup>

The problem of excessive purchases of risky products due to first-party insurance can be remedied by employing product liability, a point that has been emphasized by Professors Jon Hanson and Kyle Logue.<sup>95</sup> As noted above, if product liability is imposed on manufacturers, the prices of products will rise to reflect expected accident losses, leading consumers to make desirable purchase decisions. A consumer will have to pay \$11 for a widget, not \$10, and thus will buy a widget only if she values it at least this much, which is the socially correct outcome.<sup>96</sup>

---

<sup>93</sup> In order to isolate the effects of first-party accident insurance, we assume in this section that consumers have perfect information about product risks. More realistically, of course, the effects of consumer misperceptions and first-party insurance will operate simultaneously.

<sup>94</sup> The distortion of purchase decisions due to first-party accident insurance was first thoroughly analyzed by Jon D. Hanson & Kyle D. Logue, *The First-Party Insurance Externality: An Economic Justification for Enterprise Liability*, 76 CORNELL L. REV. 129, 159–68 (1990).

<sup>95</sup> *Id.* at 171.

<sup>96</sup> This statement presumes that consumers do not collect the \$1 of liability payments under product liability. That could be the case if these payments are obtained by consumers' first-party insurers under subrogation arrangements (which we discuss in section IV.B). If subrogation were not applicable, then the effective price of the product would be too low, even with product liability.

A qualification to the foregoing analysis is that the insurance distortion applies only to monetary losses because nonmonetary losses are not generally covered by first-party insurance policies.<sup>97</sup> This point is significant because approximately half of all tort awards are for nonmonetary losses.<sup>98</sup> Suppose in the widget example that half of the \$1 accident loss is attributable to nonmonetary harm. Then in the absence of product liability, the effective price of a widget would be \$10.50 because the consumer would bear the \$0.50 nonmonetary portion of her loss that is not covered by insurance. Only the remaining \$0.50 monetary portion of her loss would be ignored because of first-party insurance. Hence, there is a much smaller problem for product liability to correct.

#### IV. THE COMPENSATION BENEFIT OF PRODUCT LIABILITY

As we observed in the Introduction, the influence of product liability on compensation is incremental, only beyond that furnished by insurance. We begin, therefore, with a summary of the extent of insurance coverage.

##### *A. Compensation Accomplished by Insurance*

A substantial majority of Americans have some private or public insurance coverage for medical expenses, disability, loss of life, and property damage that might result from accidents, including product-related ones. A few statistics indicate the contours of individuals' insurance coverage. Approximately 85% of the population possesses health insurance,<sup>99</sup> about 78% of U.S. families own life insurance,<sup>100</sup> at least one-third of the workforce holds some form of disability coverage,<sup>101</sup> and 96% of homeowners have property insurance.<sup>102</sup> Additionally, individuals benefit from an implicit form of public insurance

<sup>97</sup> See *infra* note 125 and accompanying text.

<sup>98</sup> See TILLINGHAST-TOWERS PERRIN, U.S. TORT COSTS: 2002 UPDATE 17 fig. (2002) (indicating that awards for noneconomic losses slightly exceed those for economic losses).

<sup>99</sup> See CARMEN DENAVAS-WALT, BERNADETTE D. PROCTOR & JESSICA C. SMITH, U.S. CENSUS BUREAU, INCOME, POVERTY, AND HEALTH INSURANCE COVERAGE IN THE UNITED STATES: 2007, at 21 fig.7 (2008), available at <http://www.census.gov/prod/2008pubs/p60-235.pdf> (showing that 15.3% of the population has no health insurance). The 85% figure is probably an underestimate of the true percentage of the population that has health insurance. *Id.* at 59–60.

<sup>100</sup> See AM. COUNCIL OF LIFE INSURERS, LIFE INSURERS FACT BOOK: 2008, at 61 (2008) (citing 2004 data).

<sup>101</sup> See BUREAU OF LABOR STATISTICS, U.S. DEP'T OF LABOR, NATIONAL COMPENSATION SURVEY: EMPLOYEE BENEFITS IN THE UNITED STATES, MARCH 2008, Civilian Industry Tables, tbl.12 (2008), available at <http://www.bls.gov/ncs/ebs/benefits/2008/ebb0041.pdf>.

<sup>102</sup> See Ins. Info. Inst., Homeowners Insurance: Expenditures for Homeowners and Renters Insurance, <http://www.iii.org/media/facts/statsbyissue/homeowners> (last visited Feb. 27, 2010) (citing 2006 data). Additionally, 43% of renters had renters insurance. *Id.*

against accidents, namely, the deductibility of casualty losses (losses due to a sudden event) and medical expenses from taxable income.<sup>103</sup> Such deductions function as insurance because they reduce the loss that a person suffers from an accident.<sup>104</sup>

Although most Americans hold major forms of insurance coverage, a significant minority lack coverage, and the level of coverage of those who have insurance may be substantially less than their losses. Thus, product liability still has a potentially important role to play in providing compensation for product-related accident losses.

### *B. Compensation Accomplished by Product Liability*

To assess the extent to which product liability adds to the compensation that individuals obtain from insurance, we first discuss subrogation provisions in insurance contracts. As we explain, these provisions lower the compensation that individuals receive from product liability settlements or judgments. We then address two other factors — legal fees and delay — that also reduce the compensation that individuals derive from the product liability system.

*Subrogation provisions in insurance contracts.* Insurance contracts commonly include subrogation provisions that give the insurer the right to sue the injurer on behalf of the victim. The insurer may then keep some or all of any judgment or settlement, up to the amount it has already paid to the insured.<sup>105</sup> Subrogation rights in property and casualty insurance policies are established by common law in most jurisdictions, and these policies usually include express subrogation clauses as well.<sup>106</sup> Subrogation rights in health and medical policies

<sup>103</sup> Casualty losses can be deducted to the extent that they exceed 10% of adjusted gross income. See 26 U.S.C. § 165(h)(2) (2006). Unreimbursed medical expenses can be deducted to the extent that they exceed 7.5% of adjusted gross income. See *id.* § 213(a).

<sup>104</sup> For example, if a person incurs a \$100,000 loss but obtains a tax benefit worth \$25,000 due to the deductibility of the loss, it is as if the person were covered by a \$25,000 insurance policy. See Louis Kaplow, *The Income Tax as Insurance: The Casualty Loss and Medical Expense Deductions and the Exclusion of Medical Insurance Premiums*, 79 CAL. L. REV. 1485 (1991).

<sup>105</sup> Subrogation is explained by Allan D. Windt:  
[T]he [insurance] company is ordinarily entitled, on making a payment to or on behalf of the insured . . . to step into the shoes of the insured and assert any cause of action against a third party that the insured could have asserted for his or her own benefit had the insured not been compensated by the insurer. . . . Moreover, the insurer should be entitled to sue only for an amount of money necessary to make it whole. . . . The insurer should not . . . be able to recover for damages incurred by the insured in excess of the amount that the insured was paid by the insurer.  
ALLAN D. WINDT, *INSURANCE CLAIMS AND DISPUTES: REPRESENTATION OF INSURANCE COMPANIES AND INSURED* § 10:5, at 10–24 (5th ed. 2007) (footnotes omitted). See generally TOM BAKER, *INSURANCE LAW AND POLICY* 391–407 (2003).

<sup>106</sup> See KENNETH S. ABRAHAM, *INSURANCE LAW AND REGULATION* 244–45 (4th ed. 2005); Alan O. Sykes, *Subrogation and Insolvency*, 30 J. LEGAL STUD. 383, 383–84 (2001).

are also widespread and are generally established by explicit terms in insurance contracts.<sup>107</sup>

The following examples illustrate how an insurer can obtain some or all of a victim's judgment or settlement as a result of subrogation. Suppose that an individual suffers a \$100,000 loss for which she is fully compensated by her insurer, and the defendant settles the claim for \$75,000. Then, due to subrogation, the insurer can keep the entire \$75,000 settlement. If, however, the victim's insurance coverage is less than her loss, the situation is more complicated. Suppose now that her insurance policy compensates her for only \$60,000 of the \$100,000 loss. Then, if there is a \$75,000 settlement, one possibility is that she will receive \$40,000 of the settlement, thereby making her whole, and her insurer will retain the balance of \$35,000.<sup>108</sup> Another possibility is that the insurer will keep \$60,000 of the settlement, so that it will be fully reimbursed for its payment to the insured, with the remaining \$15,000 going to the insured. A third possibility is that the settlement will be shared between the insured and the insurance company in a way that makes neither of them whole.<sup>109</sup> In sum, subrogation often results in accident victims receiving only a fraction of their settlements or judgments,<sup>110</sup> and possibly nothing at all.<sup>111</sup>

*Legal fees.* The payment of legal fees also substantially reduces the net compensation that a victim of a product accident obtains from a settlement or judgment. The great majority of product liability suits are brought under contingency fee arrangements,<sup>112</sup> in which the legal

<sup>107</sup> See ABRAHAM, *supra* note 106, at 405; Sykes, *supra* note 106, at 383–84.

<sup>108</sup> This outcome — that the victim is made whole before the insurer retains any part of a settlement or judgment — is the most common of the three possibilities that we discuss. See ABRAHAM, *supra* note 106, at 405–07; Sykes, *supra* note 106, at 385.

<sup>109</sup> We have discussed the possible outcomes when the settlement, \$75,000, is between the insurance coverage of \$60,000 and the loss of \$100,000. Another situation arises when the settlement is less than the insurance coverage of \$60,000 — say it is \$50,000. Then there are three possibilities analogous to those mentioned in the text. Specifically, the plaintiff may receive \$40,000 of the settlement, making her whole, and the insurer will receive the remaining \$10,000; the insurer may receive the entire \$50,000 settlement, making it as whole as possible; or the plaintiff and the insurer may share the settlement in some intermediate way.

<sup>110</sup> An exception occurs in the following circumstances. Suppose that a settlement is low, such that the sum of the settlement and the victim's insurance coverage is less than the victim's loss. Then if the principle that the victim should be made whole before the insurer obtains any part of a settlement or judgment is applicable, the entire settlement would be retained by the victim.

<sup>111</sup> Subrogation does benefit individuals indirectly through lower insurance premiums (because subrogation provides insurers with additional revenue). But lower insurance premiums do not result in an increase in compensation in the event of an accident.

<sup>112</sup> According to Deborah Hensler et al., 87% of tort liability claimants who retained an attorney entered into a contingency fee arrangement to cover legal fees. DEBORAH R. HENSLER ET AL., RAND INST. FOR CIVIL JUSTICE, COMPENSATION FOR ACCIDENTAL INJURIES IN THE UNITED STATES 135–36 & tbl.5.11 (1991), available at <http://www.rand.org/pubs/reports/2006/R3999.pdf>. We assume that the percentage for product liability suits is not significantly different.

fees of individual plaintiffs typically equal 25% to 33% of the amount received.<sup>113</sup> The legal fees of class plaintiffs average approximately 18% of the value of settlements or awards.<sup>114</sup>

*Delay.* Delay in the payment of judgments or settlements also lowers the effective compensation of victims of product accidents, for two reasons. First, if victims do not receive interest on their judgment or settlement from the time of the accident until receipt of their payment, then they will be shortchanged. This issue is relevant because substantial delay in receiving compensation is typical — the time between injury and payment in tort suits often is measured in years<sup>115</sup> — and prejudgment interest sometimes is not awarded.<sup>116</sup> Second, if victims cannot easily borrow against possible future judgments or settlements, as will often be true, then they may suffer because of illiquidity while waiting for payment.

### *C. The Social Desirability of the Compensation Accomplished by Product Liability*

Although, for the reasons we have just discussed, the amount of additional compensation that individuals actually receive due to the product liability system will usually be significantly less than the amount defendants pay in settlements or judgments, it will still, of

<sup>113</sup> See *id.* at 136 (finding that the median fixed contingency fee paid is 33% and that the median adjusted contingency fee paid is between 25% and 33%); see also Herbert M. Kritzer, *The Wages of Risk: The Returns of Contingency Fee Legal Practice*, 47 DEPAUL L. REV. 267, 286 (1998) (observing that the contingency fee paid in the vast majority of fixed contingency fee arrangements is 33% and that the contingency fee paid in adjusted contingency fee arrangements is usually 25% if the case does not involve substantial trial preparation and 33% if it does).

<sup>114</sup> See Theodore Eisenberg & Geoffrey P. Miller, *Attorney Fees in Class Action Settlements: An Empirical Study*, 1 J. EMPIRICAL LEGAL STUD. 27, 51 tbl.1 (2004) (finding that the mean fee rate for tort class action lawsuits is 17.9%).

<sup>115</sup> In a study of 1452 closed malpractice claims from five liability insurers, the average time between the injury and the closure of the claim was five years. See David M. Studdert et al., *Claims, Errors, and Compensation Payments in Medical Malpractice Litigation*, 354 NEW ENG. J. MED. 2024, 2026 (2006), available at <http://content.nejm.org/cgi/content/full/354/19/2024>. For tort suits in general, claims take an average of 21 months to process if there is a bench trial, and 26.5 months if there is a jury trial. LYNN LANGTON & THOMAS H. COHEN, U.S. DEP'T OF JUSTICE, CIVIL BENCH AND JURY TRIALS IN STATE COURTS, 2005, at 8 tbl.9 (rev. Apr. 9, 2009), available at <http://www.ojp.usdoj.gov/bjs/pub/pdf/cbjtsco5.pdf>.

<sup>116</sup> See, e.g., 4 MATTHEW BENDER, DAMAGES IN TORT ACTIONS § 39.01 (2009) (“[M]any states continue to limit interest in [wrongful death and personal injury actions] to post-judgment interest . . . .”); Michael S. Knoll, *A Primer on Prejudgment Interest*, 75 TEX. L. REV. 293, 297 (1996) (“[T]he requirement that a losing defendant pay prejudgment interest to a successful plaintiff remains far from universal.”). Some states have begun to reform their laws to permit recovery of prejudgment interest. See Am. Tort Reform Ass’n, Prejudgment Interest Reform, <http://www.atra.org/issues/index.php?issue=7492> (last visited Feb. 27, 2010) (cataloging state reform efforts).

course, often be positive and sometimes be substantial. We now consider the value to individuals of this additional compensation.<sup>117</sup>

Our first point is that the value of the compensation that an accident victim obtains due to product liability will be relatively low when she also receives insurance payments. The reason is that her insurance payments will be used to satisfy her most pressing financial needs (say, for payment of medical expenses). The money she obtains through the product liability system will be used to meet her remaining and less important needs. Hence, the benefit per dollar received due to product liability payments will be lower.<sup>118</sup>

To illustrate, suppose that an individual with assets of \$200,000 faces a one percent chance of a \$100,000 loss, that she has insurance coverage that would compensate her for \$60,000 of the loss, and that the product liability system would compensate her for the remaining \$40,000.<sup>119</sup> Using economists' statistical estimates of individuals' degree of risk aversion, we calculate that she would obtain a benefit equivalent to \$1480.52 from the insurance coverage and an additional benefit of \$499.12 from the supplemental compensation provided through product liability.<sup>120</sup> Thus, the benefit per dollar of compensation due to product liability is \$0.0125 (= \$499.12/40,000), which is only approximately half of the benefit per dollar of insurance coverage,

<sup>117</sup> Individuals will have to pay for compensation provided through the product liability system in the form of higher product prices, and they will benefit indirectly from this compensation in the form of lower first-party insurance premiums (as a result of subrogation). Therefore, the net value to individuals of compensation due to product liability equals the direct value of the compensation to them, less the increase in product prices, plus the reduction in first-party insurance premiums. It is the net value of compensation that enters into the benefit-cost calculus. (Because we examine litigation costs in Part V, we do not consider price increases due to litigation costs here.)

<sup>118</sup> In economic terms, because of the declining marginal utility of money, the marginal utility of product liability-related dollars is less than the marginal utility of insurance-related dollars.

<sup>119</sup> The individual would receive \$40,000 as a result of product liability if her judgment were \$100,000 and her insurance policy included a subrogation provision. For then the insurer would obtain \$60,000 of the judgment and she would retain \$40,000.

<sup>120</sup> Let  $U(\cdot)$  represent the utility to an individual of her wealth. To calculate the dollar equivalent,  $b$ , of the benefit from \$60,000 of insurance coverage, we solve  $.99U(\$200,000 - b) + .01U(\$160,000 - b) = .99U(\$200,000) + .01U(\$100,000)$ . Note that this equation means that the individual is indifferent between paying  $b$  for the coverage and not having coverage (if  $b$  were lower than that satisfying the equation, the individual would be better off with the coverage than not, so  $b$  would not be her willingness to pay for the coverage). We employ the constant relative risk aversion utility function  $U(y) = y^{1-\gamma}/(1-\gamma)$ , where  $y$  is an individual's wealth and  $\gamma$  is the coefficient of relative risk aversion. We assume that  $\gamma$  is 2, which is consistent with economists' estimates of  $\gamma$ . See, e.g., Syngjoo Choi et al., *Consistency and Heterogeneity of Individual Behavior Under Uncertainty*, 97 AM. ECON. REV. 1921, 1931 (2007); Martin L. Weitzman, *Subjective Expectations and Asset-Return Puzzles*, 97 AM. ECON. REV. 1102, 1103 (2007). Solving for  $b$  in the equation above, we obtain  $b = \$1480.52$ . Similarly, to obtain the dollar equivalent of the benefit of the next \$40,000 of coverage provided by the liability system, we solve  $U(\$200,000 - \$600 - b) = .99U(\$200,000 - \$600) + .01U(\$160,000 - \$600)$  (the \$600 figure represents the actuarially fair premium for the \$60,000 of insurance coverage), which results in  $b = \$499.12$ .

\$0.0247 (= \$1480.52/60,000). Note that the actuarially fair premium for each dollar of compensation is \$0.01 (= 1% x \$1), whereas, because of risk aversion, the individual is willing to pay \$0.0125 on average for each dollar of compensation through the product liability system, and \$0.0247 for each dollar of compensation through insurance. In other words, she is willing to pay 25% more than the fair premium for compensation through the product liability system and 147% more than the fair premium for compensation through insurance.

Our second point about the value of compensation from product liability applies when the level of loss that an accident victim suffers is modest, as would often be the case when a product liability suit is brought as a class action.<sup>121</sup> Then the value of compensation per dollar received would be quite low because, by definition, a victim's financial needs after experiencing a modest loss will not be great. Consider a defectively designed water heater that leaks and causes individuals to incur clean-up costs of \$100. Such a loss would be a minor one for most individuals and, hence, so would the value of compensation per dollar received for the loss. We calculate that the benefit per dollar of compensation for a loss of this magnitude is \$0.010005 (= \$1.0005/100), which means that the individual is not even willing to pay one percent more than the fair premium for compensation through the product liability system.<sup>122</sup>

Our last point about the compensatory value of the product liability system is relevant when accident victims receive damages for non-pecuniary losses, notably for pain and suffering. Such compensation tends to be of low value because pain and suffering per se usually do not increase one's need for money, however much they lower one's well-being. For example, although the death of a child would cause the child's parents the greatest anguish, this loss would not be likely to

<sup>121</sup> See John C. Coffee, Jr., *Class Action Accountability: Reconciling Exit, Voice, and Loyalty in Representative Litigation*, 100 COLUM. L. REV. 370, 417 (2000) ("[T]he traditional class action aggregates small claims that are individually uneconomical to litigate."). In the 1997 case of *Amchem Products*, the Supreme Court wrote: "The policy at the very core of the class action mechanism is to overcome the problem that small recoveries do not provide the incentive for any individual to bring a solo action prosecuting his or her rights. A class action solves this problem by aggregating the relatively paltry potential recoveries into something worth someone's (usually an attorney's) labor." *Amchem Prods., Inc. v. Windsor*, 521 U.S. 591, 617 (1997) (quoting *Mace v. Van Ru Credit Corp.*, 109 F.3d 338, 344 (7th Cir. 1997)) (internal quotation marks omitted).

<sup>122</sup> Assume, as in the previous example, that the probability of a loss occurring is one percent and that the individual's initial wealth is \$200,000. Then the dollar equivalent,  $b$ , of the benefit from \$100 of compensation in the event of a loss is calculated by solving  $U(\$200,000 - b) = .99U(\$200,000) + .01U(\$199,900)$ . Using the utility function discussed *supra* note 120 results in  $b = \$1.0005$ .



generate a greater need for money (it probably would decrease their financial requirements).<sup>123</sup>

When one takes the higher product prices due to compensation for pain and suffering into account — product prices will rise to cover manufacturers' payments for pain and suffering damages — consumer welfare can be shown to decline. To amplify, suppose an individual faces a one percent chance of a product accident that would cause significant pain and suffering, for which she would be awarded \$100,000. The expected value of her compensation is \$1,000 ( $= 1\% \times \$100,000$ ) and the product price will rise by the same amount. Although the higher price will be exactly offset by the expected value of her compensation, we calculate that she will be made worse off by \$365.84 as a result of a policy of compensating for pain and suffering losses.<sup>124</sup> This decline in well-being occurs because the liability system effectively forces individuals to purchase insurance against such losses even though they would not want to purchase insurance for pain and suffering if they had a choice (for example, most parents do not buy insurance that would pay them money in the event of the death of a child because they do not find the insurance worth the premium).<sup>125</sup> The reduction in consumer welfare attributable to compensation for nonmonetary losses may be a significant consideration because, as

<sup>123</sup> Similarly, an injury to a person that causes significant discomfort, say a broken wrist, would not be expected to create financial needs beyond the cost of medical treatment and possibly the replacement of lost income. The point is that pain and suffering per se do not usually enhance the need for money.

<sup>124</sup> Let  $L$  represent the utility loss from pain and suffering. Assume that an individual's assets are \$200,000 and that she is purchasing a good, say an automobile, that would cost \$30,000 if there were no pain and suffering awards and \$31,000 if there were (the higher price is due to the manufacturer's liability cost for pain and suffering of \$1,000  $= 1\% \times \$100,000$ ). The amount,  $w$ , by which she is made worse off as a result of receiving compensation for pain and suffering and having to pay \$31,000 for the automobile as a result is determined by the following equation:  $U(\$170,000 - w) - .01L = .99U(\$169,000) + .01U(\$269,000) - .01L$ . The left-hand side of the equation is, aside from  $w$ , her expected utility if she pays \$30,000 for the automobile and does not receive pain and suffering damages in the event of a product-related accident. The right-hand side is her expected utility if she pays \$31,000 for the automobile and receives pain and suffering damages of \$100,000 if an accident occurs. Using the utility function *supra* note 120 and solving for  $w$  yields  $w = \$365.84$ .

<sup>125</sup> See generally SHAVELL, *supra* note 7, at 228–31; Kenneth J. Arrow, *Optimal Insurance and Generalized Deductibles*, 1974 SCANDINAVIAN ACTUARIAL J. 1; Philip J. Cook & Daniel A. Graham, *The Demand for Insurance and Protection: The Case of Irreplaceable Commodities*, 91 Q.J. ECON. 143 (1977); W. Kip Viscusi & William N. Evans, *Utility Functions That Depend on Health Status: Estimates and Economic Implications*, 80 AM. ECON. REV. 353 (1990); Richard J. Zeckhauser, *Coverage for Catastrophic Illness*, 21 PUB. POL'Y 149 (1973). But see Steven P. Croley & Jon D. Hanson, *The Nonpecuniary Costs of Accidents: Pain-and-Suffering Damages in Tort Law*, 108 HARV. L. REV. 1785 (1995) (arguing that individuals desire nonpecuniary damages and insurance).

noted previously, approximately half of all tort payments are for such losses.<sup>126</sup>

In sum, the benefit of product liability with respect to compensation is not nearly as great as might first appear, and might well be small or could even be negative. The justification for this conclusion is mainly that the compensation provided through the product liability system for monetary losses is incremental in nature — only in addition to the compensation already provided through private and public insurance — and that the compensation provided for nonmonetary losses is generally detrimental to consumers.

## V. THE COSTS OF PRODUCT LIABILITY

In this Part we discuss the costs attributable to the product liability system: the legal expenses associated with product liability lawsuits, as well as the loss of consumer welfare due to the increase in product prices resulting from product liability litigation.

### A. Legal Expenses

A common measure of the legal expenses associated with tort liability is the percentage of the total payments made by defendants that is retained by plaintiffs — the lower this percentage, the higher the legal expenses. Tillinghast-Towers Perrin reports in a nationwide survey of the tort system that victims receive only \$0.46 of every dollar paid by defendants.<sup>127</sup> Other authors come to similar conclusions. James Kakalik and Nicholas Pace estimate that in tort litigation generally, victims obtain \$0.46 to \$0.47 per dollar of tort system expenditures.<sup>128</sup> Also, Kakalik and his coauthors ascertain that in asbestos cases victims obtain \$0.37 of every dollar paid by defendants,<sup>129</sup> and Stephen Carroll and his coauthors find that in such cases victims obtain \$0.42.<sup>130</sup> Professor Patricia Danzon concludes that for medical malpractice claims victims receive \$0.40 for every dollar of defendants'

---

<sup>126</sup> See *supra* p. 1462.

<sup>127</sup> See TILLINGHAST-TOWERS PERRIN, U.S. TORT COSTS: 2003 UPDATE 17 (2003) (victims receive \$0.22 for economic losses and \$0.24 for noneconomic losses). Subsequent reports do not state the amount obtained by plaintiffs per dollar spent by defendants. See, e.g., TOWERS PERRIN, 2008 UPDATE ON U.S. TORT COST TRENDS (2008).

<sup>128</sup> See JAMES S. KAKALIK & NICHOLAS M. PACE, RAND INST. FOR CIVIL JUSTICE, COSTS AND COMPENSATION PAID IN TORT LITIGATION ix tbl.S.3 (1986). The numbers reported in the text are based on the net compensation received by plaintiffs compared to the total expenditures on tort litigation, using the low and high estimates in Table S.3. *Id.*

<sup>129</sup> JAMES S. KAKALIK ET AL., RAND INST. FOR CIVIL JUSTICE, COSTS OF ASBESTOS LITIGATION vii tbl.S.2 (1983).

<sup>130</sup> STEPHEN J. CARROLL ET AL., RAND INST. FOR CIVIL JUSTICE, ASBESTOS LITIGATION 104 (2005).

liability insurance payments,<sup>131</sup> and Peter Huber also reports that victims receive \$0.40 for such claims.<sup>132</sup> Huber states as well that in product liability litigation, victims obtain \$0.40 for every dollar paid by defendants for liability insurance.<sup>133</sup> Professors Joni Hersch and Kip Viscusi observe that in tort litigation in Texas, plaintiffs receive \$0.57 for every dollar paid by defendants.<sup>134</sup> Some of these studies do not take into account the administrative costs of insurers, the value of the time spent by litigants, or the operating costs of the judicial system,<sup>135</sup> and therefore overestimate the amount obtained by victims per dollar of total litigation-related expenditures.

The preceding review of findings about the costs of the tort system implies that, for each dollar that an accident victim receives in a settlement or judgment, it is reasonable to assume that a dollar of legal and administrative expenses is incurred. In other words, for society to use the tort system to transfer money to victims is analogous to a person using an ATM at which a withdrawal of \$100 results in a service fee of \$100.

There is a sense in which the tort system is even more expensive than this. For every \$100 nominally received by victims, only a portion of this amount is retained by them on average because some of it is kept by first-party insurers under subrogation arrangements.<sup>136</sup> If, for example, victims retain \$50 of each \$100 received, society incurs \$100 in legal expenses in order to transfer only \$50 to victims. Equivalently, for each dollar that an accident victim receives, two dollars of legal expenses are incurred. In all then, the tort system, and thus the product liability system,<sup>137</sup> is very expensive.

### B. Price Distortions

We discuss here an indirect cost of product liability, that it discourages socially beneficial consumption. This reduction in consumption

---

<sup>131</sup> Patricia M. Danzon, *Liability for Medical Malpractice*, in 1 HANDBOOK OF HEALTH ECONOMICS 1339, 1369 (A.J. Culyer & J.P. Newhouse eds., 2000).

<sup>132</sup> His claim is that "[s]ixty cents of every dollar spent on malpractice liability insurance are absorbed by administrative and legal costs," which implies that only \$0.40 would be left for victims. See HUBER, *supra* note 11, at 151.

<sup>133</sup> See *id.*

<sup>134</sup> Joni Hersch & W. Kip Viscusi, *Tort Liability Litigation Costs for Commercial Claims*, 9 AM. L. & ECON. REV. 330, 359 tbl.5 (2007).

<sup>135</sup> For example, Hersch & Viscusi take only partial account of the administrative costs of liability insurers and exclude the value of the time of litigants and the costs of the judicial system. See *id.*

<sup>136</sup> See *supra* pp. 1463–64.

<sup>137</sup> We are assuming that the costs of the product liability system are comparable to those of the tort system generally.

occurs, as we now explain, because product liability leads product prices to rise undesirably as a result of litigation costs and the award of damages for nonmonetary losses.

*Litigation cost-related price distortion.* We observed in Part III that product liability causes product prices to reflect product risks and hence may help consumers to make correct purchase decisions. It was assumed there, for simplicity, that the product liability system operated without generating litigation costs. When litigation costs are taken into account, however, product liability causes prices to rise too much and consumers to purchase too little.

To elaborate, recall that in our example in Part III the price of widgets under product liability was \$11, the sum of the \$10 production cost and \$1 in expected harm, and thus consumers bought widgets if and only if they valued them more highly than \$11.<sup>138</sup> Now suppose that a manufacturer's litigation costs are \$0.40 per widget on average and that a consumer's litigation costs are also \$0.40 per widget. Then the price of a widget would have to be \$11.40 in order for manufacturers to cover all of their costs, including \$0.40 in litigation costs. Because consumers also bear \$0.40 in litigation costs per widget, they would not purchase a widget unless they valued it more highly than \$11.80 (= \$11.40 + \$0.40). Consequently, some consumers would be undesirably discouraged from buying widgets because the effective price of widgets would exceed \$11. For instance, a consumer who places a value of \$11.50 on a widget would have obtained a \$0.50 net benefit (= \$11.50 - \$11) from purchasing one, but she would not buy one if there is product liability because the effective price would be \$11.80. This foregone benefit of \$0.50 is a consumer welfare loss, and such losses occur for all consumers who refrain from buying widgets because of the litigation cost-related price increase.<sup>139</sup>

We say that this welfare loss is caused by a price distortion because the effective price of widgets exceeds the \$11 effective price that would be applicable were there no liability and thus no litigation costs. Consumer welfare losses due to this price distortion are obviously distinct from the direct losses due to the litigation costs themselves. In the ex-

<sup>138</sup> See *supra* section III.A, pp. 1459-61.

<sup>139</sup> For simplicity, we have been implicitly assuming in this paragraph that consumers correctly estimate their expected litigation costs. However, the point that litigation cost-related price increases cause consumer welfare losses also holds if consumers misperceive such costs. The only difference is that the magnitude of the welfare losses depends on the degree to which consumers underestimate or overestimate expected litigation costs. In the example in the text, we said that a consumer would add to the price of \$11.40 the \$0.40 of litigation costs that she would bear on average. But if the consumer underestimates expected litigation costs, she will add less than \$0.40 to \$11.40, so that the distortion due to litigation costs would be lessened. Conversely, if the consumer overestimates such costs, the distortion due to litigation costs would be exacerbated.

treme, the litigation cost-related price increase due to product liability could be so high that it would discourage most consumers from purchasing the product and consequently cause the manufacturer to withdraw the product from the marketplace or to go out of business. If so, all consumers who would have purchased the product in the absence of product liability will suffer welfare losses.

*Nonmonetary loss-related price distortion.* We noted in Part IV that product liability causes product prices to rise to reflect payments by firms for nonmonetary losses, and we explained that consumers are made worse off as a consequence because the value they attach to compensation for nonmonetary losses is less than its cost to them in the form of higher prices.<sup>140</sup> Our point here is that, because of this effect, some individuals will be inefficiently discouraged from buying products in the first place. In other words, these individuals are made worse off by product liability not because they are effectively forced to purchase a type of insurance that they do not want when they buy the product, but rather because they are induced by the high price of the product not to buy it.

Consider, for example, parents who contemplate purchasing a bicycle helmet for their child. Suppose that the price of the helmet is \$5 higher than it otherwise would be due to the manufacturer's expected liability payments for nonmonetary losses if the helmet is defective and fails to protect the child in an accident. Suppose also that the value to the parents of being able to obtain damages for such losses is only \$1. Then product liability would lower the net value of the helmet to the parents by \$4, which might undesirably dissuade them from buying it. This detrimental effect of product liability might be significant because of the importance of nonmonetary losses.

## VI. IS PRODUCT LIABILITY SOCIALLY WORTHWHILE GIVEN ITS BENEFITS AND COSTS?

In this Part we compare the benefits of product liability to its costs, first for products that are widely sold, and then for products that are not widely sold. We are focusing here on central tendencies; as the reader knows, the assessment of benefits and costs will not be uniform within each category of products.

### A. *Product Liability for Widely Sold Products*

We have explained why product liability would not be expected to increase very much the safety of products for which market forces and regulation are strong. We observed that this point is most relevant for

---

<sup>140</sup> See *supra* pp. 1467–69.

widely sold products, and we found no statistical evidence suggesting that product liability has in fact enhanced product safety for the three widely sold products that have been studied: general aviation aircraft, automobiles, and the DPT vaccine.<sup>141</sup> We also considered whether product liability improves the purchase decisions of consumers by increasing the prices of risky products. We concluded that this effect will be beneficial to the extent that consumers misperceive product risks or have first-party accident insurance,<sup>142</sup> but that it will be distortionary to the extent that prices rise due to litigation costs or payment of pain and suffering damages.<sup>143</sup> We inquired as well about the degree to which product liability promotes the compensation of victims, and found that this benefit is limited — because most accident victims already will have some insurance coverage — and may even be negative — because approximately half of the compensation is for pain and suffering losses for which individuals generally do not want to be insured.<sup>144</sup> Finally, we emphasized that the costs of the product liability system are great.<sup>145</sup>

Before assessing the desirability of product liability for widely sold products, we need to explain why its effect on prices is unlikely to be desirable. First, it can be shown that the price-signaling benefit associated with the misperception of product risk will be less than the litigation cost-related price distortion unless consumers underestimate risks by more than fifty percent or overestimate them by more than one hundred percent.<sup>146</sup> Given the extensive availability of informa-

<sup>141</sup> See *supra* section II.C, pp. 1453–59.

<sup>142</sup> See *supra* Part III, pp. 1459–62.

<sup>143</sup> See *supra* section V.B, pp. 1470–72.

<sup>144</sup> See *supra* Part IV, pp. 1462–69.

<sup>145</sup> See *supra* Part V, pp. 1469–72.

<sup>146</sup> To demonstrate this point, assume that the demand curve for a product is linear,  $P = a - bQ$ , where  $P$  is the price,  $Q$  is the quantity, and  $a$  and  $b$  are positive parameters. Let  $C$  be the cost per unit of production,  $H$  be the expected harm per unit, and  $\lambda$  be the degree of underestimation of risk (so consumers believe that the expected harm per unit is  $(1 - \lambda)H$ ). Assume also that the parties' litigation costs equal the amount of money obtained by the plaintiff. See *supra* section V.A, pp. 1469–70. This implies that each party's litigation costs are  $(1/3)H$  (for then the plaintiff obtains  $(2/3)H$  after paying her litigation costs of  $(1/3)H$ , and the defendant incurs litigation costs of  $(1/3)H$ ). Under these assumptions, the deadweight loss (the reduction in social welfare from its ideal level) in the absence of liability can be shown to be  $.5[(a - C - (1 - \lambda)H)/b] - [(a - C - H)/b]\lambda H$ ; this is the area of the triangle that is above the demand curve and below the price line at  $C + H$ , between the ideal consumption level and the higher level that occurs due to misperceptions. Similarly, the deadweight loss in the presence of liability is  $.5[(2 - \lambda)(H/3)/b][(2 - \lambda)(H/3)]$ ; this is the area of the triangle that is below the demand curve and above the price line at  $C + H$ , between the ideal consumption level and the lower level that occurs due to the litigation cost-related price increase. Setting these two expressions equal to each other and solving for  $\lambda$  yields  $\lambda = .5$ . It follows that if  $\lambda$  is less than .5, the deadweight loss in the presence of liability exceeds the deadweight loss in the absence of liability. In other words, the price-signaling benefit is less than the litigation cost-related price distortion unless  $\lambda$  exceeds .5. Similarly, it can be shown that if consumers overestimate product risks, the price-signaling benefit is less than the litigation cost-

tion about product risks that we discussed above,<sup>147</sup> it seems unlikely that consumers would generally misperceive risks to this degree. Second, the price-signaling benefit of product liability as a corrective for the price distortion due to consumers having first-party insurance is limited because such insurance typically covers only monetary losses.<sup>148</sup> And this benefit, too, cannot be obtained without causing a related price distortion due to litigation costs.<sup>149</sup> Third, as we noted, there also is a price distortion caused by compensating consumers for nonmonetary losses.<sup>150</sup> On balance, these considerations do not provide a clear basis for finding that the price-signaling benefit outweighs the price distortion cost; and if this benefit does outweigh this cost, the difference seems unlikely to be significant.

We can now take stock of the benefits and costs of product liability for widely sold products. We have just explained why the price-signaling benefit might not exceed the corresponding price distortion cost and, if it does, why it is not likely to exceed the distortion cost by much. We have also concluded that product liability tends to have only a modest product safety benefit for widely sold products and that there is little reason for believing that product liability has a significant compensatory benefit. This leaves on the ledger the legal costs of the product liability system, which are substantial, equaling or exceeding the payments received by product accident victims. Hence, our analysis suggests that product liability will often, if not usually, be socially undesirable for widely sold products — or, at the very least, that the case for product liability is not easy to make in this context.

We next consider for concreteness the benefits and costs of product liability for widely sold products in two industries discussed previously.

*Pharmaceuticals.* In the case of the DPT vaccine, as we noted above, product liability has not resulted in an improvement in product safety — the safety of the vaccine did not change despite a large increase in manufacturers' exposure to liability risk.<sup>151</sup> Product liability has, however, led to a twenty-fold increase in the price of the DPT vaccine<sup>152</sup> and an undesirable decrease in the number of preschool children who were vaccinated of more than one million.<sup>153</sup> The com-

---

related price distortion unless  $\lambda$  is less than  $-1$ , that is, unless the perceived risk is more than double the actual risk.

<sup>147</sup> See *supra* section II.A, pp. 1443–50.

<sup>148</sup> See *supra* section III.B, pp. 1461–62.

<sup>149</sup> Note, however, that this price distortion is the same one associated with the first point. The two price distortions are not additive.

<sup>150</sup> See *supra* p. 1472.

<sup>151</sup> See *supra* p. 1457.

<sup>152</sup> Manning, *supra* note 85, at 273.

<sup>153</sup> See Richard L. Manning, *Is the Insurance Aspect of Producer Liability Valued by Consumers? Liability Changes and Childhood Vaccine Consumption*, 13 J. RISK & UNCERTAINTY 37, 47

pensatory benefits of product liability for vaccine accident victims are likely to be limited for the general reasons discussed above. Finally, DPT product liability litigation involves legal costs of approximately five dollars for every dollar received in compensation.<sup>154</sup> Thus, product liability for DPT-related accidents appears to be socially undesirable.

With regard to prescription drugs generally, physicians should have relatively good information about adverse outcomes and therefore market forces should work relatively well to discipline makers of unsafe drugs. Also, as we said, the FDA actively regulates prescription drugs by seeking to winnow out unsafe drugs in the testing stage, monitoring the safety of drugs that it approves for sale, and regulating labels and warnings.<sup>155</sup> Consequently, the effect of product liability on the safety of pharmaceutical products might not be significant, and we are not aware of evidence that suggests otherwise. Additionally, for reasons discussed above, we assume that product liability has limited price-signaling and compensatory value. The costs of pharmaceutical-related product liability litigation, however, are quite large.<sup>156</sup> It is at least plausible, therefore, that product liability is not socially beneficial for many pharmaceutical products.

*General aviation aircraft.* As we observed earlier, two studies found that a substantial increase in product liability litigation had no apparent effect on the safety of general aviation aircraft.<sup>157</sup> This finding is not surprising because, as we noted, buyers of aircraft have strong incentives to learn about aircraft risks, and the FAA extensively regulates the design and maintenance of aircraft. The increased litigation did, however, cause the prices of general aviation aircraft to rise dramatically, resulting in a steep decline in sales<sup>158</sup> and leading Cessna, a dominant manufacturer, to halt production of several of its mod-

---

(1996). We are presuming that it is socially desirable for all children to be vaccinated, in part because pertussis and diphtheria are communicable diseases. Most states require immunization at school entry. *Id.* at 41.

<sup>154</sup> See Manning, *supra* note 85, at 271.

<sup>155</sup> See *supra* pp. 1450–51.

<sup>156</sup> See Tomas J. Philipson & Eric Sun, *Is the Food and Drug Administration Safe and Effective?*, J. ECON. PERSP., Winter 2008, at 85, 94–95 (suggesting that the deadweight losses to consumers and producers from the price increases due to product liability litigation in the pharmaceutical industry are in the tens of billions of dollars).

<sup>157</sup> See *supra* pp. 1455–56.

<sup>158</sup> Sales of new airplanes by general aviation manufacturers declined from 17,811 units in 1978 to 1143 units a decade later, a decline of 93.5%. Martin, *supra* note 69, at 483. Manufacturers attributed the decline to price increases that had occurred as a result of enhanced product liability exposure. See *General Aviation Accident Liability Standards Act of 1987: Hearing on S. 473 Before the Subcomm. on Aviation of the S. Comm. on Commerce, Science & Transportation*, 100th Cong. 50 (1987) (statement of Robert Martin, attorney representing Beech Aircraft).



els.<sup>159</sup> This outcome was likely to have been socially undesirable because, if buyers of aircraft were generally well-informed about the relevant risks, they presumably had been making appropriate purchase decisions prior to the price increases. Also, the compensatory rationale for product liability in regard to aircraft accidents is questionable, as it appears no different from the compensatory rationale for product liability in general. Finally, the cost of product liability litigation concerning general aviation accidents was significant.<sup>160</sup> In light of the preceding observations, the case favoring product liability for general aviation aircraft seems weak.

### *B. Product Liability for Products That Are Not Widely Sold*

As we have explained, market forces and regulation are likely to be less effective in promoting safety for products that are not widely sold than for products that are widely sold. Hence, the safety benefit of product liability will generally be greater for such products. This observation strengthens the case for product liability for products that are not widely sold, though our analysis of the other benefits of product liability, and of its costs, applies more or less unchanged.

## VII. THE PREVAILING SOCIAL ENDORSEMENT OF PRODUCT LIABILITY

In this Part we summarize the views of courts, academics, the media, and public policy organizations about product liability. We explain that they broadly approve of such liability even though some have criticized it as too expansive. However, we find that neither the proponents nor the critics of product liability undertake a serious evaluation of its benefits and costs.

### *A. Judicial Opinions*

Over the last century, courts have generally increased the scope of the liability of firms for harms done to their customers. They have al-

---

<sup>159</sup> See DONALD M. PATILLO, A HISTORY IN THE MAKING: 80 TURBULENT YEARS IN THE AMERICAN GENERAL AVIATION INDUSTRY 155 (1998) ("The Conquest I and II were the last of Cessna's once-extensive twin-engined line to remain in production, but all aircraft other than the Citation series and the Caravan were suspended indefinitely in May 1986."). The CEO of Cessna, Russ Meyer, said that Cessna's lightplane production would resume if a more favorable liability environment emerged. Mark R. Twombly, *Kill the Messenger*, AOPA PILOT, Aug. 1993, at 125. After the General Aviation Revitalization Act passed in 1994, Meyer stated that Cessna would restart production of three single-engine aircraft models. Thomas A. Horne, *Manufacturers Face the Future*, AOPA PILOT, Sept. 1994, at 5.

<sup>160</sup> See Martin, *supra* note 69, at 482–83 (finding that from 1971 through 1976, Beech spent \$18 million insuring and defending product liability claims, of which only about \$3 million went to claimants).

tered the foundation of such liability from contract — predicated on a firm having sold a product directly to a customer — to tort — not requiring a firm to have sold its product directly to a customer.<sup>161</sup> In recent years, however, courts have acted to curtail product liability to some extent.<sup>162</sup>

One important rationale for product liability offered in judicial opinions is that it promotes fairness, especially the notion that a firm that benefits from selling a dangerous product should have to pay for the harms that the product causes. For example, in *Brooks v. Beech Aircraft Corp.*,<sup>163</sup> the court stated, “The burden of illness from dangerous products . . . should be placed upon those who profit from its production . . . . That burden should not be imposed exclusively on the innocent victim.”<sup>164</sup> Naturally, this conception of fairness, like others to which the courts might appeal,<sup>165</sup> is not framed in terms of the benefits of product liability that we have considered here.

Courts do, however, often mention the instrumental benefits of product liability when they comment on its public policy justifications. Yet on these occasions their discussion is typically perfunctory and their claims often seem illogical. The influential concurring opinion of

<sup>161</sup> 1 DAVID G. OWEN, M. STUART MADDEN & MARY J. DAVIS, MADDEN & OWEN ON PRODUCTS LIABILITY § 1.4, at 9–14 (3d ed. 2000); Steven P. Croley & Jon D. Hanson, *Rescuing the Revolution: The Revived Case for Enterprise Liability*, 91 MICH. L. REV. 683, 695–712 (1993); George L. Priest, *The Invention of Enterprise Liability: A Critical History of the Intellectual Foundations of Modern Tort Law*, 14 J. LEGAL STUD. 461, 465–83 (1985); William L. Prosser, *The Fall of the Citadel (Strict Liability to the Consumer)*, 50 MINN. L. REV. 791, 791–800 (1966).

<sup>162</sup> See generally James A. Henderson, Jr. & Theodore Eisenberg, *The Quiet Revolution in Products Liability: An Empirical Study of Legal Change*, 37 UCLA L. REV. 479, 480 (1990) (“This quiet revolution is a significant turn in the direction of judicial decision making away from extending the boundaries of products liability and toward placing significant limitations on plaintiffs’ rights to recover in tort for product-related injuries.”); James A. Henderson, Jr. & Aaron D. Twerski, *Closing the American Products Liability Frontier: The Rejection of Liability Without Defect*, 66 N.Y.U. L. REV. 1263, 1271 & n.28 (1991) (listing examples of court decisions since the 1980s that have curtailed product liability).

<sup>163</sup> 902 P.2d 54 (N.M. 1995).

<sup>164</sup> *Id.* at 58 (quoting *Beshada v. Johns-Manville Prods. Corp.*, 447 A.2d 539, 549 (N.J. 1982)); see also *Greenman v. Yuba Power Prods., Inc.*, 377 P.2d 897, 901 (Cal. 1963) (“The purpose of such liability is to insure that the costs of injuries resulting from defective products are borne by the manufacturers that put such products on the market rather than by the injured persons . . . .”); *Kemp v. Miller*, 453 N.W.2d 872, 879 (Wis. 1990) (“[T]he risk of loss associated with the use of defective products should be borne by those who have created the risk and who have reaped the profit by placing a defective product in the stream of commerce.”); RESTATEMENT (THIRD), *supra* note 1, § 2 reporters’ notes cmt. a (“[T]he manufacturer should be strictly liable because it profits from its activity, which inevitably involves defect-caused harm to others.”); RESTATEMENT (SECOND), *supra* note 1, § 402A cmt. c (“[T]he justification for the strict liability has been said to be that the seller, by marketing his product for use and consumption, has undertaken and assumed a special responsibility toward any member of the consuming public who may be injured by it . . . .”).

<sup>165</sup> See, e.g., RESTATEMENT (THIRD), *supra* note 1, § 2 cmt. a (mentioning disappointment of “reasonable expectations of product performance” as a fairness rationale).

Justice Traynor in *Escola v. Coca Cola Bottling Co.*,<sup>166</sup> concerning harm done by a defective Coca Cola bottle, is illustrative. There Justice Traynor stated: “[P]ublic policy demands that responsibility be fixed wherever it will most effectively reduce the hazards to life and health inherent in defective products that reach the market. It is evident that the manufacturer can anticipate some hazards and guard against the recurrence of others, as the public cannot.”<sup>167</sup> This is essentially the only language in the opinion that considers the effect of product liability on product safety,<sup>168</sup> and its reasoning is problematic. It is true that manufacturers may be able to reduce risk and that consumers may be unable to do so, but this does not imply that *liability* is needed to induce manufacturers to lower risk. As we have stressed, manufacturers would not want to market dangerous products if their sales would fall in the wake of product-caused accidents. In other words, the opinion does not address the possibility that product safety might be achieved in the absence of liability because of market forces.

Justice Traynor’s concurrence in *Escola* does, however, raise the issue of consumer knowledge about products:

The consumer no longer has means or skill enough to investigate for himself the soundness of a product, even when it is not contained in a sealed package, and his erstwhile vigilance has been lulled by the steady efforts of manufacturers to build up confidence by advertising and marketing devices such as trade-marks. . . . Consumers no longer approach products warily but accept them on faith, relying on the reputation of the manufacturer or the trade mark.<sup>169</sup>

One might agree that consumers will often be unable to learn about product risks from direct inspection of products. But this inability to examine products does not bar consumers from learning about product risks from the print media, television, the internet, and government agencies — and, as we have emphasized, these sources provide extensive information about product safety.<sup>170</sup> Further, Justice Traynor’s view that firms employ their reputations opportunistically to sell risky products is questionable: it would be difficult for a firm to build and maintain a reputation for product safety without having a true record of product safety. Finally, and most importantly, Justice Traynor does

<sup>166</sup> 150 P.2d 436 (Cal. 1944).

<sup>167</sup> *Id.* at 440–41 (Traynor, J., concurring).

<sup>168</sup> There are two additional sentences bearing on deterrence that are summary in nature: “It is to the public interest to discourage the marketing of products having defects that are a menace to the public. . . . It is to the public interest to prevent injury to the public from any defective goods by the imposition of civil liability generally.” *Id.* at 441.

<sup>169</sup> *Id.* at 443.

<sup>170</sup> See *supra* pp. 1445–48. Of course, at the time of the *Escola* decision, television was in its infancy and the internet did not exist.

not recognize that whether consumers have knowledge of product risks influences whether firms have incentives to reduce those risks.

Justice Traynor's *Escola* opinion also fails to mention that the regulation of product risks may lead firms to take desirable precautions and thus reduces the need for product liability.<sup>171</sup> Additionally, the opinion does not consider whether product liability has in fact led to improvements in safety.

The abbreviated and intellectually unsatisfactory character of Justice Traynor's statements about product liability and safety in *Escola* is representative of what is found in other decisions that refer to the risk reduction rationale for product liability.<sup>172</sup> For example, the court in *U.S. Airways v. Elliott Equipment Co.*<sup>173</sup> states without analysis that "imposing strict liability here would serve as an incentive to safety because [defendant] Fluidics . . . is in a better position than a consumer to prevent circulation of defective products."<sup>174</sup> Here we see the same non sequitur as in *Escola*. Just because the manufacturer is in the superior position to prevent defects does not imply that liability is needed to improve product safety; market forces and regulation may already lead the manufacturer to prevent defects. As in *Escola* and *U.S. Airways*, the occasional references in other opinions to the effect of product liability on product safety are generally conclusory and presumptive.<sup>175</sup>

<sup>171</sup> Justice Traynor in *Escola* does mention the section of the Health and Safety Code that "prohibits the manufacturing, preparing, compounding, packing, selling . . . of any adulterated food" and that imposes strict criminal liability on manufacturers. *Escola*, 150 P.2d at 441 (Traynor, J., concurring). He argues that this "public policy of protecting the public from dangerous products placed on the market" should be expanded beyond food products and containers. *Id.* Here Justice Traynor is using regulation as a justification for expanded product liability, not suggesting that regulation may be a substitute for product liability.

<sup>172</sup> Justice Traynor did not even mention the safety rationale explicitly in *Greenman v. Yuba Power Prods., Inc.*, 377 P.2d 897 (Cal. 1963), an influential product liability case.

<sup>173</sup> No. 06-1481, 2008 WL 4425238 (E.D. Pa. Sept. 29, 2008).

<sup>174</sup> *Id.* at \*5. This case involved injury to an employee of U.S. Airways when a boom supplied by Fluidics for deicing aircraft collapsed. The court presumed that liability would be needed to induce a firm like Fluidics to ensure the safety of its booms. But the court did not ask whether Fluidics would have a motivation, even in the absence of liability, to supply safe booms in order to retain its business with U.S. Airways and other airlines. Moreover, although the court noted that local authorities regulated the safety of airport equipment, *id.* at \*1, it did not consider this in assessing the need for liability.

<sup>175</sup> See, e.g., *All Alaskan Seafoods, Inc. v. Raychem Corp.*, 197 F.3d 992, 995 (9th Cir. 1999) (providing only a cursory treatment of the safety rationale for product liability and stating that "[p]roduct liability promotes safer products by placing responsibility on the manufacturer, which is the party most able to prevent harm"); *Sindell v. Abbot Labs.*, 607 P.2d 924, 936 (Cal. 1980) (stating without elaboration that "[t]he manufacturer is in the best position to discover and guard against defects in its products and to warn of harmful effects; thus, holding it liable for defects and failure to warn of harmful effects will provide an incentive to product safety"); *Bell v. Jet Wheel Blast*, 462 So. 2d 166, 171 (La. 1985) (asserting that "in many instances the manufacturer would have no incentive to make and market a safer product" if its liability were reduced); Heath

The discussion of the safety rationale for product liability in the *Restatement (Third) of Torts: Products Liability* is similar. The *Restatement* mentions the safety justification in only a few sentences, assuming its importance, and does not consider that market forces and regulation may encourage product safety.<sup>176</sup> The *Restatement (Second)* merely notes in a phrase that the provision of safety is a rationale for product liability.<sup>177</sup>

Most courts are silent about the price-signaling benefit of product liability, though some have observed that product liability can have the desirable effect of causing the prices of defective products to rise, dampening their consumption. For example, in *Bynum v. FMC Corp.*,<sup>178</sup> the court stated that “increased prices will . . . discourage consumers from purchasing risky products and thereby lower total accident costs to society.”<sup>179</sup> This view, however, fails to recognize that,

---

v. Sears, Roebuck & Co., 464 A.2d 288, 293 (N.H. 1983) (referring to deterrence in only one sentence, which claimed that “without the stimulus of plaintiffs’ products liability actions, the incentive to improve products and make them safer would not exist”); *Gantes v. Kason Corp.*, 679 A.2d 106, 112 (N.J. 1996) (claiming that the state’s interest in product safety “is furthered through the recognition of claims and the imposition of liability based on principles of strict products-liability law”); *Leichtamer v. Am. Motors Corp.*, 424 N.E.2d 568, 575 (Ohio 1981) (including only a single reference to product safety, the statement that “the public interest in human life and safety can best be protected by subjecting manufacturers of defective products to strict liability in tort when the products cause harm”); *Dippel v. Sciano*, 155 N.W.2d 55, 58 (Wis. 1967) (arguing that “the manufacturer has the greatest ability to control the risk created by his product since he may initiate or adopt inspection and quality control measures thereby preventing defective products from reaching the consumer”). There are, however, occasional opinions in which the reasoning about deterrence is not conclusory because they discuss whether imposing liability would promote product safety in the particular circumstances. See, e.g., *McKay v. Rockwell Int’l Corp.*, 704 F.2d 444, 452 (9th Cir. 1983) (arguing that imposing liability would not be likely to foster product safety because market forces already accomplish this — the plaintiff, a purchaser of military equipment, is knowledgeable and would not buy dangerous products); *Queen City Terminals, Inc. v. Gen. Am. Transp. Corp.*, 653 N.E.2d 661, 672 (Ohio 1995) (explaining that product liability does not promote product safety when buyers are knowledgeable about product risks and specify the design of the product).

<sup>176</sup> We have found three passages on deterrence in the *Restatement (Third)*: “On the premise that tort law serves the instrumental function of creating safety incentives, imposing strict liability on manufacturers for harm caused by manufacturing defects encourages greater investment in product safety . . . .” RESTATEMENT (THIRD), *supra* note 1, § 2 cmt. a. “Subsections (b) and (c), which impose liability for products that are defectively designed or sold without adequate warnings or instructions . . . achieve the same general objectives as does liability predicated on negligence. The emphasis is on creating incentives for manufacturers to achieve optimal levels of safety in designing and marketing products.” *Id.* “Strict liability for harm caused by manufacturing defects has been supported on the ground that it promotes investment in product safety.” *Id.* § 2 reporters’ note cmt. a.

<sup>177</sup> The *Restatement (Second)* states that a justification for strict liability is that “the consumer of such products is entitled to the maximum of protection at the hands of someone, and the proper persons to afford it are those who market the products.” RESTATEMENT (SECOND), *supra* note 1, § 402A cmt. c. A full reading of comment c suggests that the quoted statement refers to the safety rationale for product liability.

<sup>178</sup> 770 F.2d 556 (5th Cir. 1985).

<sup>179</sup> *Id.* at 571.

to the extent that consumers have knowledge of product risks, an increase in the price of a dangerous product is not needed to induce them to refrain from buying it — they would not purchase a product that they knew to be dangerous, regardless of whether its price was higher due to product liability.<sup>180</sup> Other courts that mention the effect of product prices on purchases generally make the same error, believing that it is ordinarily beneficial for prices to reflect product risks.<sup>181</sup> Moreover, none of the product liability opinions that we have examined recognize that product prices will also increase due to litigation costs and thereby may undesirably chill the purchase of products. These mistakes of the courts are also made in the *Restatement (Third) of Torts: Products Liability*.<sup>182</sup>

Concerning compensation, Justice Traynor's concurring opinion in *Escola* is again illustrative of judicial thinking generally. He states that "[t]he cost of an injury and the loss of time or health may be an overwhelming misfortune to the person injured, and a needless one, for the risk of injury can be insured by the manufacturer."<sup>183</sup> Here Justice Traynor provides a compensation-based argument for product liability, but he does not consider that many individuals already have various forms of private and public insurance. He also does not take into account that, because insurance policies frequently have subrogation provisions, only a portion of the liability payments made by defendants result in additional compensation to plaintiffs. Finally, Justice Traynor does not realize that compensating individuals for pain and suffering tends to be detrimental because, as we explained, this prac-

<sup>180</sup> *But see McKay*, 704 F.2d at 452 (observing that prices will beneficially discourage consumers from buying risky products only if consumers underestimate product risks).

<sup>181</sup> *See, e.g., LaRosa v. Superior Court*, 176 Cal. Rptr. 224, 233 (App. Dep't Super. Ct. 1981) (recognizing the principle, though not finding it applicable to the case at issue, that a firm "will pass the costs of injuries along to the consumer in the form of increased prices for more dangerous products and that the consumer will be more likely to buy safer goods because they will be relatively less expensive"); *Belle Bonfils Mem'l Blood Bank v. Hansen*, 665 P.2d 118, 122 n.7 (Colo. 1983) ("Enterprise liability assumes that a product's market price ought to include the cost of accidents caused by defects in the product, and that consumer demand will shift accordingly to safer substitutes.").

<sup>182</sup> *See* RESTATEMENT (THIRD), *supra* note 1, § 2 cmt. a ("Some courts and commentators also have said that strict liability discourages the consumption of defective products by causing the purchase price of products to reflect, more than would a rule of negligence, the cost of defects."); *id.* § 2 reporters' note cmt. a. There is no discussion of the price-signaling rationale for product liability in the RESTATEMENT (SECOND), *supra* note 1.

<sup>183</sup> *Escola v. Coca Cola Bottling Co.*, 150 P.2d 436, 441 (Cal. 1944) (Traynor, J., concurring). Justice Traynor also observes that the cost to the manufacturer of providing this implicit insurance can, through higher product prices, be "distributed among the public as a cost of doing business." *Id.* This is true, but it is a very expensive form of insurance for individuals. Our discussion of litigation costs implies that consumers effectively pay premiums (in the form of higher product prices and the litigation costs that they bear) of approximately twice their expected benefits. *See supra* section V.A, pp. 1469–70.

tice effectively forces them to purchase a type of insurance that most individuals do not want.<sup>184</sup> When other opinions and the *Restatements* address the compensation benefit of product liability, they also do so in a spare manner and without reference either to the role of victims' insurance coverage or to the undesirable effect of compensation for pain and suffering.<sup>185</sup>

With respect to the costs of the product liability system, the courts say little or nothing. Only a tangential reference to litigation costs is made by Justice Traynor in *Escola*,<sup>186</sup> and only a sentence is devoted to this topic in the *Restatements*.<sup>187</sup> Most opinions omit discussion of litigation costs altogether.<sup>188</sup>

<sup>184</sup> See *supra* pp. 1467–69. This omission is not surprising because the point at issue was not developed until after the *Escola* opinion.

<sup>185</sup> Courts typically devote only a sentence to this topic (if they even mention it). See, e.g., All Alaskan Seafoods, Inc. v. Raychem Corp., 197 F.3d 992, 995 (9th Cir. 1999) (“Manufacturers can set prices to spread the risk of defects over the entire market for their products.”); *Sindell v. Abbot Labs.*, 607 P.2d 924, 936 (Cal. 1980) (“[T]he cost of an injury and the loss of time or health may be an overwhelming misfortune to the person injured, and a needless one, for the risk of injury can be insured by the manufacturer . . .” (quoting *Escola*, 150 P.2d at 441 (Traynor, J., concurring))); *Bell v. Jet Wheel Blast*, 462 So. 2d 166, 171 (La. 1985) (“[One] basic goal[] of . . . strict products liability . . . [is] the placing of the burden of accidental injuries caused by defective products on those who market them, to be treated as a cost of production against which liability insurance can be obtained.”); *Queen City Terminals, Inc. v. Gen. Am. Transp. Corp.*, 653 N.E.2d 661, 672 (Ohio 1995) (“[M]anufacturers are in a better position to bear the costs of injuries, because they have the ability to ‘distribute the losses of the few among the many who purchase the products’ by charging higher prices.” (citation omitted)); *Blankenship v. Gen. Motors Corp.*, 406 S.E.2d 781, 784 (W. Va. 1991) (“[P]roduct liability is concerned with *spreading the cost of inevitable accidents*. Inherent in this cost-spreading function is the collection of what amounts to insurance premiums from all the purchasers of products . . .” (footnote omitted)); see also RESTATEMENT (THIRD), *supra* note 1, § 2 cmt. a (“[B]etween [sellers] and innocent victims who suffer harm because of defective products, the product sellers as business entities are in a better position than are individual users and consumers to insure against such losses.”); RESTATEMENT (SECOND), *supra* note 1, § 402A cmt. c (“[P]ublic policy demands that the burden of accidental injuries caused by products intended for consumption be placed upon those who market them, and be treated as a cost of production against which liability insurance can be obtained . . .”). But see *McKay*, 704 F.2d at 452 (recognizing that the plaintiff would receive generous compensation for his accident through the Veterans’ Benefits Act).

<sup>186</sup> His only mention of litigation costs concerns the comparison between a regime of product liability and a regime in which injured consumers sue retailers and retailers sue manufacturers (he describes the latter as “needlessly circuitous and engender[ing] wasteful litigation”). *Escola*, 150 P.2d at 442 (Traynor, J., concurring).

<sup>187</sup> RESTATEMENT (THIRD), *supra* note 1, § 2 reporters’ note cmt. a (“Another objective traditionally thought to be promoted by strict liability is the reduction of transaction costs, which include the costs of operating the accident reparation system.”).

<sup>188</sup> See, e.g., *Bynum v. FMC Corp.*, 770 F.2d 556 (5th Cir. 1985); *U.S. Airways v. Elliott Equip. Co.*, No. 06-1481, 2008 WL 4425238 (E.D. Pa. Sept. 29, 2008); *Brooks v. Beech Aircraft Corp.*, 902 P.2d 54 (N.M. 1995). But see *Torres v. Goodyear Tire & Rubber Co.*, 867 F.2d 1234, 1238–39 & n.4 (9th Cir. 1989) (recognizing the significance of legal costs and citing academic literature on their magnitude).

In sum, judicial opinions usually devote no more than a few sentences to the safety and compensation benefits of product liability, generally overstating them, and largely ignore the costs of product liability. It is not surprising, therefore, that when courts consider public policy arguments concerning product liability, they typically find the arguments to be supportive of such liability.

### B. Academic Writing

Early academic writing on product liability was oriented toward traditional legal concerns and instrumental goals, while much of the more recent scholarly writing on product liability has adopted an avowedly economic approach in addressing questions of legal policy. We now review both bodies of literature.

*Traditional academic writing.* The traditional literature on product liability is exemplified by the work of such authors as Professors Fleming James, William Prosser, Page Keeton, and James Henderson.<sup>189</sup> These commentators generally favor product liability.<sup>190</sup> One justification that they often mention is that it advances conceptions of fairness. Prosser, for example, writes that “[t]he public interest in human life, health and safety . . . justifies the imposition, upon all suppliers of such products, of full responsibility for the harm they cause”;<sup>191</sup> and Page Keeton states that “it is important to recognize as a basic reason for liability that a consumer’s expectations have been frustrated.”<sup>192</sup>

<sup>189</sup> See, e.g., FOWLER V. HARPER & FLEMING JAMES, JR., *THE LAW OF TORTS* (1956); WILLIAM L. PROSSER, *HANDBOOK OF THE LAW OF TORTS* (4th ed. 1971); Henderson & Eisenberg, *supra* note 162; Henderson & Twerski, *supra* note 162; Fleming James, Jr., *General Products — Should Manufacturers Be Liable Without Negligence?*, 24 TENN. L. REV. 923 (1957) [hereinafter James, *General Products*]; Fleming James, Jr. & John J. Dickinson, *Accident Prone-ness and Accident Law*, 63 HARV. L. REV. 769 (1950); Page Keeton, *Products Liability — Some Observations About Allocation of Risks*, 64 MICH. L. REV. 1329 (1966) [hereinafter Keeton, *Products Liability: Observations*]; Page Keeton, *Products Liability — The Nature and Extent of Strict Liability*, 1964 U. ILL. L.F. 693 [hereinafter Keeton, *Products Liability: Nature*]; Prosser, *supra* note 161. Other traditional scholars of product liability include Robert E. Keeton, David G. Owen, Gary Schwartz, and Marshall Shapo.

<sup>190</sup> See, e.g., James, *General Products*, *supra* note 189, at 923–24 (arguing that product liability is desirable because it spreads risks); Priest, *supra* note 161, at 505 (describing Prosser’s important role as Reporter of the *Restatement (Second) of Torts*, which adopted Section 402A, imposing liability on sellers for injuries from defective products); Prosser, *supra* note 161, at 799–800 (suggesting that strict product liability be adopted). Page Keeton and James Henderson appear to favor some form of product liability, although both are concerned about its proper design, especially the scope of the definition of product defect. See Henderson & Twerski, *supra* note 162; Keeton, *Products Liability: Observations*, *supra* note 189, at 1330–34.

<sup>191</sup> William L. Prosser, *The Assault Upon the Citadel (Strict Liability to the Consumer)*, 69 YALE L.J. 1099, 1122 (1960). In advancing this argument, it is clear that Prosser is not referring to the effect of liability on product safety or on the compensation of victims.

<sup>192</sup> Keeton, *Products Liability: Nature*, *supra* note 189, at 695.



In addition, traditional writing usually considers public policy rationales for product liability, including improved safety. For instance, James believes that an object of such liability is to “cut down accidents” and argues that “the manufacturer is in a peculiarly strategic position to improve the safety of his products, so that the pressure of strict liability could scarcely be exerted at a better point.”<sup>193</sup> But traditional writing rarely includes discussion, even of a qualitative nature, of how market forces and regulation may already accomplish some risk reduction, and thus why the effect of product liability on safety may be limited. Most traditional writing also fails to inquire whether there is empirical evidence concerning the influence of product liability on product safety. In sum, even though this writing justifies product liability in part on the basis of its ability to reduce risk, it does not offer sound reasons for believing that such liability actually has a significant effect on safety.

With regard to price-signaling, traditional writers are, like the courts, mostly silent. We have been unable to find in the traditional literature on product liability more than a few references to this issue.<sup>194</sup>

The traditional scholarship predominantly views product liability as desirably contributing to the compensation of accident victims. James in particular is well known for having emphasized the general risk-spreading role of manufacturer liability, declaring that “the enterprise which causes losses should lift them from the individual victims and distribute them widely.”<sup>195</sup> Similarly, Page Keeton and his coauthors write that firms “have the capacity to distribute the losses of the few among the many who purchase the products . . . by charging higher prices.”<sup>196</sup> Although these writers speak of the beneficial effect of product liability in promoting compensation, they generally overlook the point that private and public insurance already serve this purpose

---

<sup>193</sup> James, *General Products*, *supra* note 189, at 923. Some commentators, though, are skeptical of the effect of product liability on product safety. See, e.g., Prosser, *supra* note 191, at 1119.

<sup>194</sup> One such reference is Henderson & Twerski, *supra* note 162, at 1273, observing that “products liability would reduce the consumption of relatively risky products by increasing their monetary costs to users and consumers.”

<sup>195</sup> James, *General Products*, *supra* note 189, at 924; see also Priest, *supra* note 161, at 470 (“James promoted one principle — risk distribution — above all others.”). James, like Justice Traynor in *Escola v. Coca Cola Bottling Co.*, 150 P.2d 436 (Cal. 1944), overlooked the point that when risk distribution is accomplished through product liability, resulting in higher product prices, individuals pay effective premiums substantially greater than their expected benefits. This mistake is generally made by traditional academic writers who justify product liability on the ground that it spreads risk through higher product prices.

<sup>196</sup> W. PAGE KEETON ET AL., PROSSER AND KEETON ON THE LAW OF TORTS 693 (5th ed. 1984).

to a significant degree.<sup>197</sup> Moreover, they do not consider that awards for pain and suffering constitute a form of insurance that individuals ordinarily do not want and that therefore lowers their well-being. Hence, even though traditional writing views compensation as a paramount rationale for product liability, it fails to address questions of obvious importance about the degree to which product liability actually facilitates that goal.

Finally, traditional writing typically omits the costs of the product liability system from its analysis, although some authors mention this factor in passing.<sup>198</sup>

To summarize, the traditional literature, like judicial opinions, views product liability favorably because it furthers certain fairness goals and yields safety and compensation benefits. However, the traditional writing does not undertake a realistic assessment of these benefits, and it essentially disregards the costs of the product liability system.

*Economically oriented academic writing.* During the last several decades, a substantial literature has emerged that adopts a self-consciously economic viewpoint in analyzing product liability.<sup>199</sup> One branch of this literature emphasizes the theoretical point that product liability has a beneficial effect on product safety to the degree that consumers lack information about product risks. This writing, which includes articles by Professors Michael Spence and Steven Shavell, also examines how different rules of product liability function under varying assumptions concerning imperfect information.<sup>200</sup> It does not, however, attempt to assess empirically the effect of product liability on product safety.

---

<sup>197</sup> The only exception of which we are aware is Keeton, *Products Liability: Observations*, *supra* note 189, at 1333–34, who comments that the existence of private insurance reduces the need for product liability to accomplish risk spreading.

<sup>198</sup> See, e.g., Keeton, *Products Liability: Nature*, *supra* note 189, at 693 (noting that a potential problem with product liability is the “economic and sociological costs of adjudications”).

<sup>199</sup> This literature is discussed in DEWEES, DUFF & TREBILCOCK, *supra* note 66, at 188–264; Geistfeld, *supra* note 89, at 287; Kessler & Rubinfeld, *supra* note 89, at 361–63; and W. Kip Viscusi, *Products Liability*, in 3 THE NEW PALGRAVE DICTIONARY OF ECONOMICS AND THE LAW 131 (Peter Newman ed., 1998).

<sup>200</sup> See sources cited *supra* note 92; see also Andrew F. Daughety & Jennifer F. Reinganum, *Product Safety: Liability, R&D, and Signaling*, 85 AM. ECON. REV. 1187 (1995); Dennis Eppler & Artur Raviv, *Product Safety: Liability Rules, Market Structure, and Imperfect Information*, 68 AM. ECON. REV. 80 (1978); Victor P. Goldberg, *The Economics of Product Safety and Imperfect Information*, 5 BELL J. ECON. & MGMT. SCI. 683 (1974); Roland N. McKean, *Products Liability: Implications of Some Changing Property Rights*, 84 Q.J. ECON. 611 (1970); A. Mitchell Polinsky & William P. Rogerson, *Products Liability, Consumer Misperceptions, and Market Power*, 14 BELL J. ECON. 581 (1983).

Another body of economic literature focuses on the question whether liability for defective products should be imposed by the courts as a form of tort liability or instead be determined by contract (notably, through the use of waivers or warranties). Some contributors to this literature argue that consumers tend to have better information than the courts about product characteristics, their own aversion to risk, and other factors bearing on the optimal form of liability. These writers conclude, therefore, that consumers are better off if they are allowed to choose the form of liability through contract. Scholars who develop this theme include Professors Richard Epstein, George Priest, Paul Rubin, and Alan Schwartz.<sup>201</sup> Conversely, other writers believe that courts generally have superior information about the need for product liability, in which case consumers are better off if liability is chosen by the courts. Scholars who elaborate this view include Professors Steven Croley, Jon Hanson, William Landes, and Kip Viscusi, and Judge Posner.<sup>202</sup> Hence, the major issue addressed by the contributors to this branch of the literature on product liability is whether such liability should be selected by the parties or by the courts, not whether product liability is socially desirable.

Also of note is the economically oriented writing of Judge Calabresi, who introduced the notion that tort liability should be imposed on the cheapest cost avoider — the party who can reduce accident costs most effectively.<sup>203</sup> According to Judge Calabresi, this principle implies that manufacturers should be strictly liable for injuries to their customers when the manufacturers are better able to assess and control the risks of an accident.<sup>204</sup> However, he does not develop the point that strict liability would not be needed to induce manufacturers to control accident risks to the degree that market forces already ac-

---

<sup>201</sup> See RICHARD A. EPSTEIN, *MODERN PRODUCTS LIABILITY LAW* (1980); PAUL H. RUBIN, *TORT REFORM BY CONTRACT* (1993); George L. Priest, *A Theory of the Consumer Product Warranty*, 90 YALE L.J. 1297 (1981); Alan Schwartz, *Proposals for Products Liability Reform: A Theoretical Synthesis*, 97 YALE L.J. 353 (1988). But see Abraham L. Wickelgren, *The Inefficiency of Contractually-Based Liability with Rational Consumers*, 22 J.L. ECON. & ORG. 168, 168–69 (2006) (arguing that court-imposed liability is needed even when consumers correctly judge a product's risk).

<sup>202</sup> See W. KIP VISCUSI, *REFORMING PRODUCTS LIABILITY* (1991); Croley & Hanson, *supra* note 161; William M. Landes & Richard A. Posner, *A Positive Economic Analysis of Products Liability*, 14 J. LEGAL STUD. 535 (1985).

<sup>203</sup> See generally CALABRESI, *supra* note 7; Guido Calabresi & Jon T. Hirschoff, *Toward a Test for Strict Liability in Torts*, 81 YALE L.J. 1055 (1972).

<sup>204</sup> Thus, for example, a manufacturer of a motorized lawnmower should be strictly liable for accidents caused by a defective blade breaking off and striking the owner. Conversely, the owner of the lawnmower should bear her own losses if she drives it on a road and has an accident. See Calabresi & Hirschoff, *supra* note 203, at 1063–64.

comply with this task,<sup>205</sup> and he omits mention of regulation as an alternative. In addition, Judge Calabresi does not attempt to determine whether the costs of the product liability system outweigh its safety and compensation benefits.<sup>206</sup>

Hence, although there is a substantial body of writing about the economics of product liability, essentially no one attempts to assess its benefits and costs.<sup>207</sup> As we explained, the focus tends to be on the theoretical effects of product liability under different assumptions about consumer information, on the question of whether product liability should be chosen by the parties or by the courts, and on the concept of the cheapest cost avoider.<sup>208</sup>

### C. Public Commentary

Many newspapers, television networks, and policy-oriented organizations favor product liability or report the views of others who do so. The main reasons given are essentially those provided by the courts and traditional academic writers. First, they observe that product liability promotes fairness. For example, an op-ed in the *Washington Post* stated that product liability is necessary “to ensure justice for victims”<sup>209</sup> and the *New York Times* claimed that it is needed in order to “punish the makers and sellers of unsafe products.”<sup>210</sup> A second justification they furnish is that product liability encourages product safety.

<sup>205</sup> He observes only that bargaining between a buyer and a seller could render liability irrelevant. See CALABRESI, *supra* note 7, at 162.

<sup>206</sup> In Calabresi & Hirschhoff, *supra* note 203, the compensatory benefits and the costs of the product liability system are not discussed. In Judge Calabresi’s *The Costs of Accidents*, there is a qualitative discussion of the benefits and costs of the tort system in general, but not of the benefits and costs of the product liability system in particular. For his limited discussion of product liability, see CALABRESI, *supra* note 7, at 161–73.

<sup>207</sup> However, some scholars employ benefit-cost analysis to study related questions. See DEWEES, DUFF & TREBILCOCK, *supra* note 66, at 188–214 (focusing on a comparison of strict product liability to negligence-based liability with respect to the goals of deterrence, compensation, and corrective justice); see also Stephen D. Sugarman, *Doing Away with Tort Law*, 73 CAL. L. REV. 555, 559–603 (1985) (analyzing the limited deterrence and compensation benefits of tort law generally).

<sup>208</sup> Although these have been the major topics addressed in the economic literature on product liability, other issues have been studied as well. See, e.g., Omri Ben-Shahar, *Should Products Liability Be Based on Hindsight?*, 14 J.L. ECON. & ORG. 325 (1998); James Boyd & Daniel E. Ingberman, *Should “Relative Safety” Be a Test of Product Liability?*, 26 J. LEGAL STUD. 433 (1997); Paul Burrows, *Consumer Safety Under Products Liability and Duty To Disclose*, 12 INT’L REV. L. & ECON. 457 (1992); Bruce Hay & Kathryn E. Spier, *Manufacturer Liability for Harms Caused by Consumers to Others*, 95 AM. ECON. REV. 1700 (2005); Janusz A. Ordover, *Products Liability in Markets with Heterogeneous Consumers*, 8 J. LEGAL STUD. 505 (1979).

<sup>209</sup> Jan Schlichtmann, Op-Ed., *Lawsuits: The People’s Last Resort*, WASH. POST, July 10, 1999, at A17.

<sup>210</sup> Editorial, *Another Damaging Damages Bill*, N.Y. TIMES, July 7, 1998, at A14.

A *USA Today* article, for instance, stated that product liability lawsuits provide an incentive for firms to make safer products,<sup>211</sup> and an *NBC News* story reported that a judgment against tobacco companies sent “a strong message” not to sell dangerous products.<sup>212</sup> A third basis they offer for product liability is that it compensates injured consumers. For example, the president of Public Citizen testified that “product liability litigation compensates injured people and shattered families for unspeakable losses.”<sup>213</sup>

There is, however, significant criticism of the product liability system by the business press and conservative think tanks. For instance, a *Wall Street Journal* editorial concluded that there have been “thousands of small businesses driven under by . . . one product-liability case.”<sup>214</sup> An American Enterprise Institute report stated that “[p]roducts liability has become a means of transferring wealth from the guilty and innocent alike to attorneys’ and random plaintiffs’ pockets” and that “[t]his does not deter design defects — it just deters design.”<sup>215</sup> The theme of these writings is that product liability is haphazard in its application, raises prices, inhibits innovation, causes desirable products to be withdrawn from the marketplace, and drives

<sup>211</sup> Joan Biskupic, *Court Draws Line on State Safeguards*, USA TODAY, Feb. 21, 2008, at 3A.

<sup>212</sup> *NBC Nightly News: Reactions Over Record-High Judgment Against Tobacco Companies* (NBC television broadcast July 15, 2000) (quoting the jury foreman in the case); see also MEGHAN MULLIGAN & EMILY GOTTLIEB, CTR. FOR JUSTICE & DEMOCRACY, LIFESAVERS: CJ&D’S GUIDE TO LAWSUITS THAT PROTECT US ALL (2001), available at <http://www.centerjd.org/archives/studies/Lifesavers.pdf> (arguing that lawsuits concerning dangerous products make society safer by deterring negligent behavior); Dennis A. Henigan, Op-Ed., *Sue The Gun Makers*, WASH. POST, Oct. 29, 1999, at A31 (“The threat of product liability litigation is the only incentive gun makers have to improve the safety of their products.”); Bob Herbert, Op-Ed., *Contract On the Consumer*, N.Y. TIMES, Mar. 4, 1995, § 1, at 19 (arguing that product liability lawsuits have a “deterrent effect”); Robert J. Samuelson, Op-Ed., *Lawyer Heaven*, WASH. POST, June 22, 1994, at A21 (noting that product liability law “deters dangerous products”); *CBS This Morning: Number of Lawsuits Based on Product Liability Law Rising* (CBS television broadcast Oct. 23, 1995) (reporting the position that without the threat of large damage awards, there is no reason for companies to make their products safer or take unsafe products off the market).

<sup>213</sup> *Product Liability Reform: Hearing Before the H. Comm. on the Judiciary*, 105th Cong. 122 (1997) (statement of Joan Claybrook, President of Public Citizen); see also, e.g., *NPR Morning Edition: Fertilizer Company Sued Following Oklahoma City Blast* (NPR radio broadcast May 19, 1995) (reporting that Rich Vernit of Citizen Action argued against product liability reform because it would undermine the full compensation of victims).

<sup>214</sup> See Opinion, *Review & Outlook: Lawyers Torch the Economy*, WALL ST. J., Apr. 6, 2001, at A14.

<sup>215</sup> TED FRANK, AM. ENTER. INST. FOR PUB. POL’Y RES., *ROLLOVER ECONOMICS: ARBITRARY AND CAPRICIOUS PRODUCT LIABILITY REGIMES* 6 (2007), available at [http://www.aei.org/docLib/20070104\\_LiabilityOutlookPosted\\_g.pdf](http://www.aei.org/docLib/20070104_LiabilityOutlookPosted_g.pdf).

companies out of business.<sup>216</sup> The usual recommendation is that product liability be reformed in ways that reduce its scope.<sup>217</sup>

The foregoing public commentary on product liability, like the corresponding discussion by the courts and traditional academic writers, is incompletely developed and supported. The proponents of product liability rarely provide meaningful justification for the view that it will improve safety or for the belief that it is a desirable method of compensation.<sup>218</sup> Moreover, they typically ignore the costs of the product liability system.<sup>219</sup> Similarly, most of the critics of product liability fail to supply evidence that product liability does not lead to greater safety or better compensation.<sup>220</sup> Instead, they stress that product liability

<sup>216</sup> See, e.g., MILTON R. COPULOS, THE HERITAGE FOUND., AN R FOR THE PRODUCT LIABILITY EPIDEMIC I (1985), available at [https://www.policyarchive.org/bitstream/handle/10207/9205/87452\\_1.pdf?sequence=1](https://www.policyarchive.org/bitstream/handle/10207/9205/87452_1.pdf?sequence=1) (claiming that the large number of product liability cases is “threatening the very existence of some industries”); Editorial, *Overload*, WASH. POST, May 8, 1995, at A20 (arguing that reform of product liability law is needed because “the present system is so arbitrary and unfair”); Opinion, *Review & Outlook: Litigation Liberalism*, WALL ST. J., May 12, 1992, at A24 (stating that the risk of product liability lawsuits retards product innovation); Samuelson, *supra* note 212 (noting that high liability costs are one reason that light aircraft production has declined from 13,000 to less than 1000 units annually); *The Saturday Early Show: Warning Labels Placed on Products* (CBS television broadcast Jan. 29, 2000) (observing that when companies lose product liability lawsuits, “the cost is mostly passed on to consumers . . . to the tune of more than \$152 billion in . . . higher prices”); see also Scott Gottlieb, *Articles & Commentary: More Drugs Will Mean More Lawsuits*, AM. ENTER. INST. FOR PUB. POL’Y RES., Feb. 26, 2003, <http://www.aei.org/article/16108> (arguing that product liability in the pharmaceutical industry raises prices and limits innovation); Stephen B. Presser, *How Should the Law of Products Liability Be Harmonized?: What Americans Can Learn from Europeans*, GLOBAL LIABILITY ISSUES, Feb. 2002, at 3, [http://www.manhattan-institute.org/pdf/gli\\_2.pdf](http://www.manhattan-institute.org/pdf/gli_2.pdf) (observing that product liability is random in its application and raises product prices).

<sup>217</sup> See, e.g., COPULOS, *supra* note 216 (proposing a list of reforms, including a statute of repose, a limitation on contingent fees, and restrictions on awards for noneconomic losses); FRANK, *supra* note 215 (advocating a cap on noneconomic damages and more objective safety standards); Opinion, *Review & Outlook: Guns and Poses*, WALL ST. J., Apr. 17, 2003, at A12 (arguing that Congress should pass legislation that would limit lawsuits against the firearms industry); Editorial, *Review & Outlook: The Trials of Merck*, WALL ST. J., Nov. 18, 2004, at A18 (arguing that FDA approval of a drug should insulate its manufacturer from product liability); Samuelson, *supra* note 212 (suggesting that making the losing side pay legal fees would be a “genuine remedy” for many of the problems associated with product liability litigation); Editorial, *Trial Lawyers’ Triumph*, WASH. POST, Mar. 19, 1996, at A16 (endorsing legislation that would impose caps on punitive damages in product liability lawsuits); Presser, *supra* note 216 (recommending such changes as the abolition of contingent fees and punitive damages, and the adoption of the loser-pays rule regarding legal fees).

<sup>218</sup> The articles and broadcasts cited *supra* notes 209–13 either fail to provide justification or give only superficial justification. For example, Samuelson asserts that product liability will improve safety, but the effects of market forces and regulation on product safety are ignored. See Samuelson, *supra* note 212. Similarly, Herbert claims that product liability will lead to desirable compensation, but the fact that insurance already provides significant compensation to accident victims is overlooked. See Herbert, *supra* note 212.

<sup>219</sup> This is true of most of the sources cited *supra* notes 209–13.

<sup>220</sup> None of the sources cited *supra* notes 214–17 provides evidence to support the claim that the deterrent effect of product liability is small. However, one does take into account the signifi-

raises product prices and causes firms to withdraw products from the market, though they do not recognize that these consequences are socially undesirable only if the litigation cost-related component of the price increase is sufficiently high.<sup>221</sup>

### VIII. THE CONTRAST BETWEEN PRODUCT LIABILITY AND LIABILITY TO STRANGERS

For the purposes of our analysis, product liability should be distinguished from the liability of firms for harms caused to parties who are not their customers — that is, to “strangers.”<sup>222</sup> Such victims include, for example, pedestrians struck by delivery trucks, tourists prevented from using a beach because of an oil spill, and bystanders hurt by the collapse of a crane at a construction project.

There is a crucial difference between situations in which strangers are harmed and those in which customers are harmed: if strangers are injured by a firm, the firm would not expect to lose sales as a result, whereas if its customers are injured, it would expect to suffer such losses, as we have stressed.<sup>223</sup> A pizza parlor would not be likely to experience diminished demand for its pizzas if its delivery vehicles hit pedestrians, but it would lose business if its pizzas caused food poisoning of its customers.<sup>224</sup> The important implication of these observations is that market forces will not induce firms to increase safety if those at risk are strangers.

A related point concerns price-signaling. As we explained in Part III, when the victims of product accidents are customers, price increases due to liability will not improve customers’ purchase decisions

---

cance of insurance as a source of compensation, *see* Presser, *supra* note 216, and some observe that litigation costs reduce the amount of money that victims obtain, *see, e.g., Review & Outlook: Litigation Liberalism, supra* note 216.

<sup>221</sup> None of the sources cited *supra* notes 214–17 discusses the litigation cost-related price distortion.

<sup>222</sup> *See, e.g.,* RESTATEMENT (THIRD) OF TORTS: LIABILITY FOR PHYSICAL HARM § 3 cmt. f, illus. 1 (Proposed Final Draft No. 1, 2005) (discussing an example in which a power company is made liable to a stranger — the company strung a power line across a river that came into contact with the mast of the plaintiff’s sailboat and caused severe electrical burns); *see also* DOBBS, *supra* note 1, § 227, at 578 (“Among strangers — those who are in no special relationship that may affect duties owed — the default rule is that everyone owes a duty of reasonable care to others to avoid physical harms.”).

<sup>223</sup> The discussion in this Part is based on ideas developed in Shavell, *supra* note 92.

<sup>224</sup> Similarly, an oil company probably would not lose sales if one of its tankers caused an oil spill, but it would expect to suffer a reduction in demand if its gasoline damaged automobile engines. In the case of the *Exxon Valdez* oil spill, the most serious environmental accident in North American history, Exxon’s revenue actually rose in the quarter after the spill. Exxon reported \$22.2 billion in revenue in the first quarter of 1989, the quarter during which the spill occurred, and \$23.6 billion in revenue in the second quarter of 1989. *Exxon Corp.: Interim Consol. Earnings: June ’89*, STANDARD & POOR’S DAILY NEWS, July 24, 1999, available at 1989 WLNR 267918.

to the extent that they are well-informed about product risks.<sup>225</sup> Higher pizza prices will not be needed to discourage consumption of pizza if consumers know about a substantial risk of food poisoning. But when the victims of product accidents are strangers, price increases due to liability will be needed because the customers of those products will otherwise ignore the injuries to strangers caused by their purchases. Higher pizza prices, reflecting accident costs, are required to discourage consumers from buying pizza from sellers whose delivery vehicles cause harm to pedestrians. In sum, the price-signaling benefit of liability is generally greater when the victims of product accidents are strangers than when they are customers.<sup>226</sup>

Both because of the ineffectiveness of market forces in creating safety and because of the need for product prices to reflect risk when victims are strangers, the rationale for liability is stronger in that case than when victims are customers.

## IX. CONCLUSION

We have explained in this Article that when product liability is viewed in terms of its benefits and costs, there are reasons for questioning its desirability, at least for many widely sold products. The main bases for our conclusion are as follows. First, market forces and regulation frequently reduce the need for product liability to encourage safety, especially for products sold in high volume. Moreover, the available empirical evidence suggests that the safety benefit of product liability for widely sold products is often small. Second, the price-signaling benefit of product liability is limited and is likely to be largely, if not entirely, offset by the price distortions caused by litigation costs and awards for nonmonetary losses. Third, product liability does not promote the compensation goal nearly as much as might appear because this objective is already achieved to a significant extent through private and public insurance. Furthermore, product liability tends to detract from the compensation goal because it provides awards for nonmonetary losses. Finally, the product liability system generates high legal expenses, equaling or exceeding the payments received by plaintiffs.

If our assessment of product liability is accepted, it implies that serious consideration should be given to curtailing such liability. This could be accomplished through application of legal doctrines that make the imposition of product liability depend on several factors sug-

---

<sup>225</sup> See *supra* section III.A, pp. 1459–61.

<sup>226</sup> The other components of a benefit-cost analysis of liability to strangers are essentially the same as those in our analysis of product liability. In particular, regulation tends to improve safety, the compensation rationale for liability is weak, and the costs of the liability system are high.



gested by our analysis. One is whether consumers are likely to know about a product's risk.<sup>227</sup> Another is whether the product is subject to significant safety regulation.<sup>228</sup> We expect that appropriate consideration of these two factors would, for reasons that we have explained, disfavor liability for harms caused by many widely sold products. A third factor is the likelihood that the plaintiff has insurance coverage sufficient to compensate for the monetary losses sustained.<sup>229</sup> Use of these factors would encourage the courts to reduce the scope of product liability when such liability would be unlikely to significantly promote product safety or compensation, but still allow for the imposition of product liability when it would be advantageous.<sup>230</sup>

Legislative change could also be contemplated that would limit or eliminate product liability in certain industries or for certain widely sold products. Indeed, this has already been done, for example, for general aviation aircraft<sup>231</sup> and vaccines.<sup>232</sup> Restricting or abolishing product liability might make sense for many more widely sold products.

---

<sup>227</sup> To some degree courts already take consumer knowledge into account in product liability decisions. *See, e.g.*, RESTATEMENT (THIRD), *supra* note 1, § 2 cmt. d ("The fact that a danger is open and obvious is relevant to the issue of defectiveness, but does not necessarily preclude a plaintiff from establishing that a reasonable alternative design should have been adopted that would have reduced or prevented injury to the plaintiff.").

<sup>228</sup> Courts also currently consider regulation as a factor in product liability cases. *See, e.g., id.* § 4(b) ("[A] product's compliance with an applicable product safety statute or administrative regulation is properly considered in determining whether the product is defective with respect to the risks sought to be reduced by the statute or regulation, but such compliance does not preclude as a matter of law a finding of product defect.").

<sup>229</sup> We are not aware of any legal doctrine that would allow the liability of a defendant to depend on the likelihood that the plaintiff has insurance coverage.

<sup>230</sup> In an article on which we are at work, we develop these factors and explain how they could be employed by the courts.

<sup>231</sup> *See* General Aviation Revitalization Act of 1994, Pub. L. No. 103-298, 108 Stat. 1552, § 2(a) (codified at 49 U.S.C. § 40101 notes (2006)) ("[N]o civil action for damages for death or injury to persons or damage to property arising out of an accident involving a general aviation aircraft may be brought against the manufacturer of the aircraft or the manufacturer of any new component, system, subassembly, or other part of the aircraft, in its capacity as a manufacturer if the accident occurred [after an applicable limitation period of 18 years].").

<sup>232</sup> *See* National Childhood Vaccine Injury Compensation Act of 1986, Pub. L. No. 99-660, 100 Stat. 3755, 3773 (codified at 42 U.S.C. § 300aa-22(b) (2006)) ("No vaccine manufacturer shall be liable in a civil action for damages arising from a vaccine-related injury or death associated with the administration of a vaccine after October 1, 1988, if the injury or death resulted from side effects that were unavoidable even though the vaccine was properly prepared and was accompanied by proper directions and warnings.").